

COMMERCIAL CAR JOURNAL

THE MAGAZINE FOR TRUCK AND BUS FLEET OPERATORS

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SECTION



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COMMERCIAL CAR JOURNAL

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COMMERCIAL CAR JOURNAL, April, 1952



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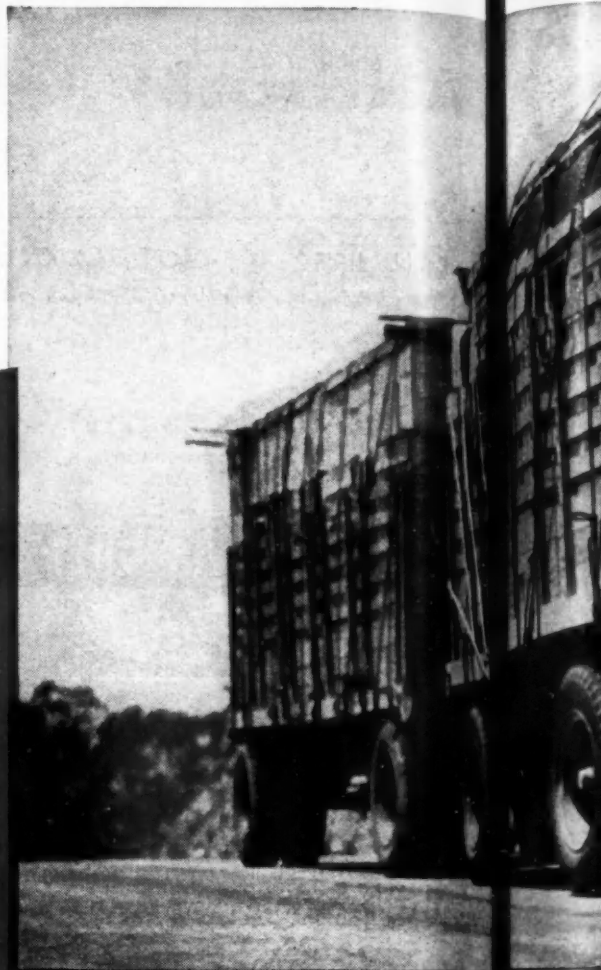
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FOR THE TRUCKING INDUSTRY



CONFERENCE C O R N E R

PRESENTING THE EXPERTS' VIEWPOINTS ON TIMELY SUBJECTS OF INTEREST TO FLEETS

Subject: Detonation

Question: What are the causes?

By George E. Leutwiler

Chief Service Engineer
McQuay-Norris Mfg. Co.

Detonation is definitely much more than an engine noise called "ping." In many cases where the "pinging" noise has been eliminated or partially eliminated by haphazard ignition adjustment, the result is loss of power and speed. This is known by many service men who have also experienced the resulting unsatisfactory engine operation from a maintenance standpoint.

A thorough diagnosis should be made of an engine which is "pinging" before attempting any adjustment. There are six factors to be taken into consideration.

1. Compression Ratio.

Engineers have always been in competition to improve their particular make of engine with respect to power, efficiency and cost. Power can be increased by increasing the cylinder bore or the rpm. Larger bores mean greater cost. To keep down cost and obtain the lowest possible engine weight per horsepower, the trend has long been to high speed light weight engines. Also since way back it has been realized that the tighter the fuel mixture is squeezed in a cylinder the more forceful will be the explosion. Higher compression ratios therefore mean more power to turn the crankshaft, providing the explosion can be slowed down so it will do more useful work. Tetraethyl lead in gasoline increases octane rating by making the gasoline burn slower. This means more power, efficiency and no ping. Therefore compression ratios have been steadily increased as slower burning, higher octane fuels have become available and combustion chamber design has been improved.

2. Fuel Used.

When ignition occurs, a flame front moves through the combustion mixture, compressing ahead of it that portion of the air-fuel mixture that is yet to be burnt. The increased pressure from this additional compression and the heat transmitted from the flame front may so preheat the remaining unburnt gas that it ignites spontaneously and almost instantaneously to produce an audible knock, called "ping." High octane fuel has

a higher ignition temperature and burns slower, so there is less chance for spontaneous combustion and the pistons have time to start moving downward, resulting in a steady powerful push without a knock.

3. Ignition Timing.

The split second and degree at which the spark occurs in relation to the piston travel is vital. The timing of the spark must vary with the speed or load. The centrifugal weights in the distributor base advance the spark as the speed increases. The vacuum control unit on the distributors tends to retard the spark as the throttle is opened under full load.

Smooth operation with adequate power and good fuel economy, with practically no "ping" on acceleration are evidence that the mechanic knows his stuff on ignition timing.

4. Operating Temperature.

An engine which knocks due to detonation of the fuel, preignition or carbon deposits, is actually trying to balk, so it is easy to understand that extremely high pressure and temperature results. When overheated, all parts working in the combustion chamber are appreciably softened and very apt to fail.

5. Carbon Deposits.

The fact that carbon is a poor conductor of heat causes it to act as an insulator, thus increasing the operating temperature by reducing the efficiency of the cooling system. Early fuels would burn at a comparatively low temperature, so a really hot engine full of carbon would run like a diesel, without benefit of spark, that is.

However, a more serious result of heavy carbon deposits is the reduction in volume of the combustion space. In this way the compression ratio may be increased enough to cause detonation.

6. Operating Load Conditions.

Under heavy load an engine running slow has the throttle fully open and so takes in a full fuel charge, which is compressed tighter and burns with more power. The temperature and pressure on the parts are at a maximum so detonation is likely. This explains why lugging an engine causes such serious trouble and why shifting to a lower gear ratio avoids trouble by keeping the engine rpm high.

In addition, detonation may be the result of faulty carburetion, upsetting the fuel ratio. Incorrect manifolding will vary the air-fuel ratio to one or more cylinders, causing detonation to occur in these isolated cylinders. Hot spots in the motor will also cause irregular combustion and detonation.

(TURN TO PAGE 220, PLEASE)

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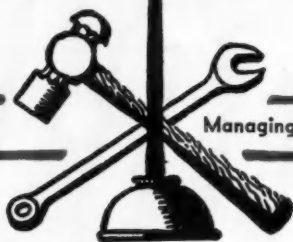
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At Your Service

By M. K. SIMKINS

Managing Editor, Commercial Car Journal



Tips on Fitting Bearings

A check for proper bearing crush can be made by blueing the inside of the rod and cap, or the cap and the crankcase bore and tightening to proper torque. Backs of bearings should show full contact.

Checks for Cylinder Wear

In checking cylinders for excessive wear and distortion, an inside micrometer should be positioned at the extreme top of the ring travel area, just below the point where the top cylinder ridge was removed. The reading should be taken at four points: in line with the crankshaft, at right angles to the crankshaft and at intermediate points on both sides. This will show any possible out-of-roundness. Maximum permissible out-of-roundness is usually set at .005.

The next measurement is taken at the bottom of the cylinder below the ring travel. This is compared with the original reading to determine the taper. The block should be rebored if the taper is greater than .015. If the taper is less than .015, it should be further checked with a dial gage to determine whether wavy conditions are present. Any such distortion should be removed by honing or reboring.

If the taper or out-of-roundness is within limits, a check for distortion should be made. Usually discolored spots on the cylinder walls will indicate pockets and distortion.

Bearing Cleaning Procedures

The Anti-Friction Bearing Distributors Assn. provides the following recommendations with respect to cleaning ball bearings. Bearings should be washed in a small tank, using a wire basket and a safety solvent intended for bearing cleaning only. The bearing should be soaked for several hours, if necessary, to loosen the grease and grime. Where scale or hardened rust is involved, a short clean bristle brush can be used. Bearings with a shield or seal on one side only should be washed, inspected and handled in the same manner as bearings without shields or seals. Bearings with removable shields should be washed and inspected after removal of seals.

On the other hand, bearings with seals or shields on both sides should not be washed. They should be wiped to keep dirt from working inside. If they stick or feel too rough for further use, they can be

sent out to specialists for reworking. Smooth running bearings of this type can be coated with a protective lubricant, wiped off and stored or returned to their original application.

Washed bearings should be rinsed in a clean container filled with clean solvent. Compressed air can be used to dry them, but they should not be allowed to spin under force of air. After cleaning, the bearing should be given a coat of rust preservative and stored in covered containers. If they are to be stored for a period of time, all surfaces should be coated with a light grease, and it should be worked into the races. After this they should be wrapped in greaseproof paper and stored in clean boxes.

Aligning Connecting Rods

Many cases of poor rod bearing life can be traced directly to misalignment conditions in the rod body, the cap or the piston pin hole. Some manufacturers contend that fleet shops are not equipped to make accurate checks and to realign bent rods. However, extra care and effort may offset in part any lack of precision aligning and straightening tools.

After worn pins and new rod bushings are installed, the piston and connecting rod assembly should be checked for alignment: 1, between the piston skirt and the crank pin bearing hole of the connecting rod; 2, for twist in the rod itself; 3, for offset of the rod; 4, for roundness of the saddle and the connecting rod cap. A rod aligning fixture, a dial gage, inside micrometer should be employed in this work. Where misalignment is found, the rod should be bent slightly beyond the correct position, then returned to the proper alignment. Metal fatigue accompanying bending of the rod body is a factor which introduces the hit or miss factor in rod alignment. Therefore, when the misalignment is great, and operating conditions are heavy-duty, it is wise to install new rods.

Front Wheel Bearing Care

Some cases of front wheel bearing difficulty on 1½ and 2-ton Chevrolets with heavy duty front axle have been reported recently. In most instances these reports have originated from certain fleet or individual operators where front wheel bearing lubrication, adjustment and installation procedures have not been followed closely.

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What's Ahead . . .

In Engine Developments?

An engineer looks into engine horsepower trends, gas turbine possibilities, use of LP gas, automatic drives and power steering; reports on progress in heavy-duty power plants

VGAZING into our crystal ball, we can discern a kaleidoscope of things that may one day brighten the design of heavy-duty vehicles. Our crystal ball shows improvements in gasoline and diesel engines; the emergence of gas turbines; wider use of LPG; wider use of automatic drives and torque converters; and a growing use of power steering.

Noteworthy too is the big horsepower race that has been going on for some years, particularly among haulers on the West Coast. The 1952 season has seen the same urge in the passenger car field and it may well have an important effect upon gasoline engine design in the future. Truck engines pushing above 200 hp are not a rarity; some engines in the diesel field develop up to 480 hp. No one yet knows where this trend will lead. Some wonder whether it will persist. And only time will tell.

Although commercial vehicle developments are necessarily more conservative than in the passenger car field, the current horsepower race among passenger car builders coupled with the emergence of high performance, high economy overhead valve V-8's has had its impact upon commercial engines.

During the past few months we have noted a flurry of noteworthy events including the Cummins 200 hp pancake diesel engine for buses; new high speed, high performance diesel models from Cummins; and the recent announcement of the three-cylinder GMC diesel models, bringing diesel performance and economy into a new low-weight range. There are also some foreign diesel engine developments well worth watching.

LPG conversions, not new to fleetmen, have reached the factory equipment stage what with the recent announcements by Reo and IHC. In at least these instances the fleet operator now can buy factory equipment designed to make the most effective use of LPG, confident that every accessory installed on the engine and vehicle meets the known requirements.

We can sit back and watch the fresh impetus to gasoline engine design, stemming from the passenger car field; and parallel improvement in the familiar and de-

By Joseph Geschelin

Detroit Technical Editor
Commercial Car Journal

pendable diesel engines. While we watch the possible impact of LPG conversions on the truck scene, other developments of unmistakable importance are cooking behind the scenes. We refer to some unorthodox gasoline engine design, still more or less in blueprint stage; and the growing up of the gas turbine. It may be an infant but we can see more prospects now than we did five years ago.

Several years ago we made a round-robin of the truck industry to inquire about the possibility of automatic drives. It looked quite out of the picture at the time. Meanwhile, IHC has been supplying door-to-door delivery jobs equipped with Fuller torque converters, coupled with a special IHC transmission. More recently, GMG announced its Model P-152-22 Parcel Delivery vehicle which comes equipped with the dual-range Hydra-Matic as standard. Just about the same time Ford announced its Courier model with the Ford-O-Matic as optional equipment. While admittedly these are all light vehicles, there is no telling how far this trend may go in the next few years.

Since it is obviously impractical to cover all the things that have happened during the past six months or more, we shall confine this analysis to some of the major trends that may affect the picture of transportation in the near future. The fact that many important developments may go without mention in this article does not mean that we do not recognize them. It is simply a matter of selecting certain highlights arbitrarily.

Gasoline Engines

THE old dependable reciprocating gasoline engine—wherever it is made and no matter by whom—still is fully capable of holding its own when it comes to mass transportation on the highways. In fact the recent revolution in passenger car engine design proves the virility and amazing flexibility of gasoline power. The trend in the passenger car field is undeniably to the punch-laden,

(TURN TO PAGE 240, PLEASE)



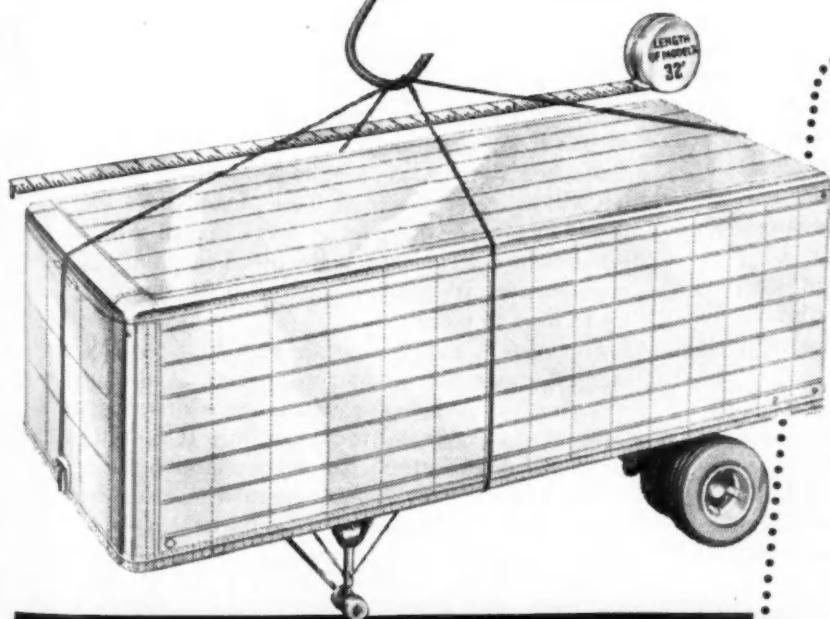
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... to cut costs
... boost payloads

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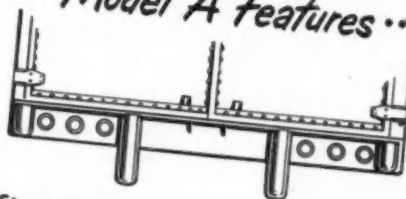
Improved Trailmobile design combines lightweight with load-carrying strength. It makes the Model "A" easier to pull and easier to maintain.



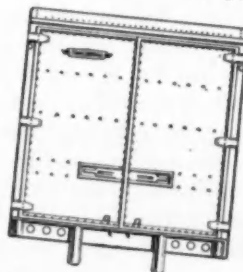
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The OVERLOAD

E D I T O R I A L C O M M E N T

Danger Signals in a Rosy Glow!

COMPILATION of a special reference annual such as this one always affords an opportunity for industry appraisal. In checking the figures, it is easy to form a very definite attitude of self-satisfaction.

Nineteen fifty-one intercity motor freight tonnage, for instance, is up another 7.2 per cent over 1950 according to data just in from the American Trucking Assns. (See page 130), for an estimated total close to 120 billion ton-miles.

Despite early production restrictions, the total number of trucks in civilian use at the end of '51 increased by another 5.2 per cent to a new all time high of 8,609,819.

Even the bus properties, hard pressed by declining city traffic, had more vehicles in use than ever before; a total of 134,716 registered units.

From all directions come encouraging reports of the progress of the industry. Except for hot and cold shortage chills, it is a statistically rosy picture as of April, 1952.

So perhaps we would be justified in stopping right there. But ours is a deeper responsibility. We would be remiss without pointing a constructively critical finger at a few danger signals.

One of these is the legislative picture. Much has been said here in recent months about such things as ton-mile taxes, inequitable legislation, and Washington hearings. We are glad to report that little fuel has been poured on the legislative fires in recent weeks. But that is only weeks, mind you, and there is definitely more fuel on the way.

Another is public relations. Despite the organized efforts of the associations and the individual efforts of many public-relations-minded trucking executives, there is but slow progress. Average John Doe or Jane Doakes, or Senator Snort or Congressman

Blow still does not like any part of a truck; and won't until drastic steps are taken.

But perhaps most distressing of all are some cold hard statistics from the ICC on *mechanical defect accidents*. CCJ published the data last month (March, pg. 105), and now is as good a time as any to admit the gremlin which appeared in the headline. These were not up 300 per cent reported; but they were up by 300 accidents over any previous year.

Five people were killed and 294 people received personal injuries, in 1950, as the result of 704 accidents for brake failures alone. And these involved only vehicles required to make reports to the ICC. In all there were more than 1700 accidents involving about 80 fatalities and nearly \$3 million in property damage as a result of mechanical defects of one type or another.

We believe most responsible people in the industry will agree that few of these should have happened at all and that almost every one of the 704 brake-failure accidents was the direct result of poor maintenance. It's a tragic admission for the industry to have to make.

Fortunately, maintenance is one thing in which every fleetman has a common interest. As its own contribution to better maintenance, COMMERCIAL CAR JOURNAL is proud to present this 16th edition of its Fleet Operators' Reference Annual. It includes a new and exclusive approach to basic fleet maintenance, beginning on page 68, which should prove helpful to newcomers and oldtimers alike. It also includes much reference data of value throughout the year.

But again this is no time for self-satisfaction. Let's get to work! Our industry has many laurels to its credit. Let's also make it the safest, best maintained and *best liked* in the country.

Bart Rawson
Editor

WASHINGTON RUNAROUND

by KARL RANNELLS *Washington Correspondent*

Production Outlook Brighter

Barring unforeseen events, the production outlook is growing brighter in the transportation field. Defense Transport Administration has demanded third quarter allocations adequate enough to permit manufacture of 275,000 trucks, 96,000 truck bodies, and 16,000 truck-trailers. Claims for this amount of output were "fully documented" in submitting them to Defense Production Administration, DTA Chief Knudson said.

In March, DPA relaxed its second quarter limitations and increased the original truck quotas from 220,000 to 250,000 units when it became apparent there would be more steel and aluminum available than first thought. No increases were made for truck-trailers in either quarter but it was expected that third quarter quota might be increased later, if such request is made.

Central Sets Wage Pattern

The Wage Stabilization Board's approval last month of the Central States wage agreement is generally seen as setting a pattern which will affect some other areas, perhaps the entire trucking industry. Under the agreement, a 19-cents-an-hour boost was approved together with six paid holidays and other benefits including an increase from \$1.50 to \$2.50 in lodging allowance.

Holiday provisions had not applied previously. But WSB said they were permissible because they are an "area practice." While the contract affects directly only about 3000 operators and some 36,000 trucking employees, the Board admitted that it would probably be used as a standard for other wage bargaining in at least 10 more states of the Southwest and Southeast—perhaps become industry-wide.

ICC Bugged Down on "Rights"

There seems to be little prospect in the months ahead for any speed-up in the processing of applications for operating authority. The House appropriations committee has been told by the ICC that if the Budget Bureau's recommended 30 per cent cut in funds is allowed to stand, the agency will be even more crippled than now. Testimony indicated that there was a backlog of 3292 cases pending before the complaints section which deals with operating authority. In addition, there were more than 1400 applications for operating rights which were awaiting hearings, not to mention decisions to be given in more than 1000 which had been heard but have been delayed because of inadequate staffing.

... Safety Regs Still Perking

Action of the Interstate Commerce Commission on the new safety regulations was hoped for not later than April 1. The final version, as drafted by the Bureau of Motor Carriers after revisions to make them more nearly conform to views of both individual commissioners and carriers, went into the hands of the commissioners for consideration early in March.

Among the reasons for the added delay is the fact that the Bureau submitted an alternative proposal in connection with each of four or five of the more controversial regulations. Thus, the final decision is left as a prerogative of the commission itself.

Good News on Highways

A determined fight is expected to be made in Congress to keep the federal aid to highways at least up to the \$500,000,000 figure of the past. Administration recommendations have been to cut the appropriations by 20 per cent or \$100,000,000. Hearings before committees have been completed and their reports were expected out in late March.

Meanwhile, control officials have promised to make "substantial increases" in materials allotments for highways during the last half of 1952. Officials told COMMERCIAL CAR JOURNAL that they expected construction activities to be "almost back to normal" by the end of the year.

Johnson Hearings Extended

Interest in the 30 or so bills (more have been added) for amendment of the Interstate Commerce Act has been so great that the hearings before the Senate Interstate and Foreign Commerce Committee have had to be extended at least through March. It had been hoped earlier to end the hearings by March 24. But a committee spokesman told CCJ the number of witnesses desiring to be heard had increased to nearly 125. This meant, he said, that the hearings could not be concluded before April 1, if then.

More Truck Mail Routes

The House Appropriations Committee has been asked for slightly more than \$6,000,000 for operation of short-haul truck mail routes next year. Savings by transfer of these routes from rail to highway transport will be approximately as much as the amount sought, the Post Office Dept. said.

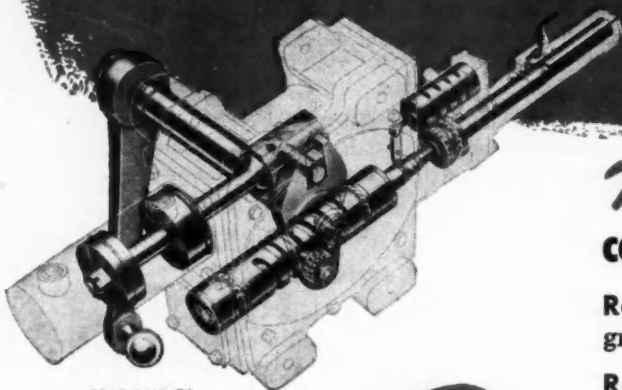
It was revealed at the hearings that the Post Office Dept. expects to have a minimum of 380 such routes in operation by July 1, beginning of the next fiscal year. If all goes well, officials said, they expect to more than double this figure in the 12 months subsequent to that date.

Ross HYDRAULIC POWER STEERING . . . SINCE 1942



Alert...
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Big brown BEAR . . . 8 feet long and
weighing more than 1000 pounds
—Alert Responsive **POWERFUL**



Model HP-70
Effortless,
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ROSS GEAR AND TOOL COMPANY • LAFAYETTE, INDIANA

Now . . . **EASIER, SAFER STEERING FOR
COMMERCIAL VEHICLES AND PASSENGER CARS**

Ross Hydrapower instantly prevents loss of control in soft ground, sand, snow, from tire blow-outs or road obstructions.

Ross Hydrapower steered wheels promptly return to straight-ahead driving position after turns.

With **Ross Hydrapower** there is no lag in the hydraulic response either for power assistance or resisting shocks—consequently no tendency to over control.

Ross pioneering in assisted steering dates back to 1942 when the U. S. Army chose **Ross** to solve its then toughest steering problem—the 50-ton tank retriever.

While most current **Ross Hydrapower** production is devoted to military needs—as government requirements permit, **Ross Hydrapower** will bring new steering ease, safety and satisfaction to additional commercial vehicles and passenger cars.



DETROIT DISPATCH

by LEN WESTRATE Detroit News Editor

Editors' Note

As this issue went to press, CCJ's Detroit News Editor Len Westrate was in the Far East as a guest of the armed forces. Primary purpose of the four weeks' trip, which included visits to Alaska, Japan, Korea and Hawaii, was to observe military vehicles under combat and unusual climatic conditions. Special emphasis was being given to modification techniques and the mammoth repair facilities set up in Japan.

His first hand reports, to be presented in later issues, will constitute a significant "plus" service for CCJ readers. Meanwhile we invite your attention to the latest developments on the manufacturing front prepared this month by other members of the staff.

Lube Oil Changes Proposed

B. G. Symon, chairman of the Lubrication Committee of the American Petroleum Institute, has submitted a progress report on a proposed change in automotive lubricating oil designations, at a session concluding a two-day meeting of the committee at the Sheraton-Cadillac Hotel, Detroit.

Symon announced that by a ballot vote just completed the General Committee of the Division of Marketing had given its unanimous support to a new system of service classifications and designations for automotive crankcase oils. The plan now goes before the API Board of Directors who will consider the proposal at a meeting later this month. The cooperation of the automobile and petroleum industries in working out proposed new classifications and designations for automotive crankcase oils will be beneficial both to the consuming public and to those who service it.

Taxes on "Use" Fuels Criticized

A real problem for truckers is seen in the growing movement in many states to impose excessive taxes on "use" (diesel and propane) fuels that are grossly unfair in relation to those levied on gasoline. (See p. 188.) In some states the tax on "use" fuels is reported to be 50 per cent more than it is on gasoline. The need for some kind of uniform taxation formula is also seen in the fact that some states collect the tax at the pump, while others do not.

9 Million Truck Tires in 1952

There is belief in some quarters that the tire industry will sell 45 million replacement passenger car tires and 9 million truck tires during 1952. It is predicted that production during the second and third quarters of the year will lag behind sales, and that in the third quarter there will also be difficulty in obtaining sizes and quantities of tires desired.

1951 Scrappage Hits 4,361,441

Passenger car and truck scrappage in 1951 reached all-time record levels, more than double the 27-year average scrappage rate, according to a recent final report by R. L. Polk & Co. Total scrappage was 4,361,441 vehicles, including 3,711,820 passenger cars and 649,621 trucks. This compares with the 27-year average of 1,989,888 vehicles.

In spite of 6,064,753 new vehicles (5,060,903 new passenger cars and 1,003,850 new trucks) registered during the past calendar year, the total of vehicles in use has increased by only 1,703,000 units (1,349,000 cars and 354,000 trucks).

AMA to Survey Truck Industry

The Automobile Manufacturers Association is planning to conduct a survey of the trucking industry to test its general standing with the public. Approximately 4000 personal interviews will be held by an independent research organization on such questions as driver courtesy, truck road taxes, truck adherence to safety laws, etc., to gain a representative cross-section of opinion.

Smaller 12-V Battery

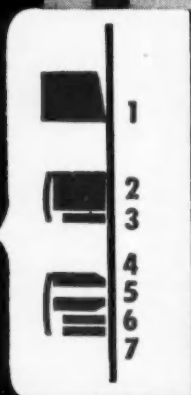
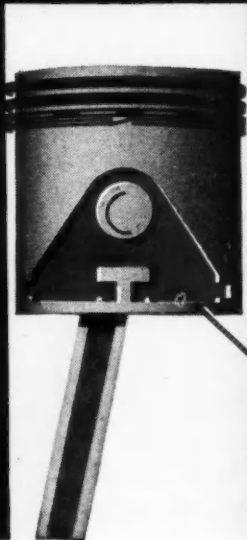
With 12-volt ignition definitely in the not too distant future for passenger cars, there has been some discussion about much larger batteries and generators being required. However, new developments by Army Ordnance in cooperation with suppliers indicates that larger batteries will not be required. In fact, smaller units than those now in use in cars have already been developed to be used in pairs for the standard 24-volt systems now installed on all new Ordnance vehicles.

The new battery, made by a well-known automotive supplier, is about the same length as the normal six-volt car battery, but is much narrower. Its weight is about the same, however. Earlier types of 12-volt batteries used by Ordnance weighed twice as much as the new smaller one.

Correct Piston Rock

and stop premature engine wear, too!

THE RAMCO
MULTIPLE
CONTACT METHOD
PUTS 7
BEARING CONTACTS
ON CYLINDER WALL
TO STABILIZE
PISTON



When skirts are collapsed the Ramco Method employs RAMCO PISTON SKIRT STABILIZERS that permanently correct for collapsed skirts by placing pressure at right angles from the wrist pin.



by correcting "Rocking Chair Action"

with multiple contacts instead of pressure...

RAMCO ACTUALLY CURBS WEAR

MULTIPLE contacts make possible control of piston rock, ring barreling and all other ring conditions due to rocking chair action! They make possible the use of stabilization rather than pressure to control oil and blow-by.

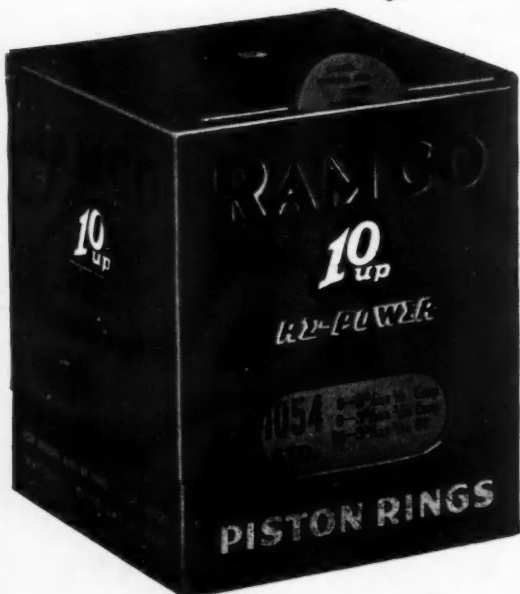
That is why Ramco 10-Up Ring combinations are kind to cylinder

walls... why they actually work to curb further wear when installed in tapered or out-of-round cylinders.

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Ramco Heavy-Duty Piston Rings!*

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Ramco 10-Up Heavy-Duty Piston Rings Are Especially Designed for Fleet Installations . . . Re-Ring or Re-Bore!

CCJ REPORTS

on News of the Industry

Busmen Hup to Maintenance

For the past several weeks, busmen have been holding profitable conferences on maintenance practices. In Atlanta, Galveston and Boston, Cleveland and St. Louis, regional groups of the American Transit Assn. sought means of cutting costs through reclamation of parts (CCJ, Mar. p. 62); hot spray painting (CCJ, Jan., p. 62), and many other means. The Tri-State group in Philadelphia went further in quest for "Standard Parts" (CCJ, Jan., p. 110); but reported little progress.

Washing was a particularly favored subject. Equipment ran the gamut from straight elbow power to complete rotary units. In between came the familiar fountain brush, a shop built spray (about \$15), a fixed mop roof washer (\$29) and a shop built rotary outfit made up for about \$550.

Customer Relations Council

New techniques for stimulating sales and fostering good shipper-carrier relationships was discussed by leading sales executives at the spring meeting of the American Trucking Associations' Customer Relations Council, held at the Shamrock Hotel, Houston, Texas, April 6-8. Nearly 500 operators, sales directors and top salesmen of trucking firms from all over the country, attended the conference.

A feature of this year's meeting was the sales controls and methods panel containing leading figures from both within and outside the trucking industry.

Included in this session were discussions of personnel selection, training and presentation, reception (what the average traffic manager wants to hear from a freight representative), and sales incentive programs.

Looking Ahead

At Columbus, Ohio, May 12-16, American Trucking Associations will hold the Annual Spring Meeting with three technical councils taking part in a Trucking Operations Forum. Topics for the papers of the Equipment and Maintenance Council include: "Maintenance Cost Control—How It is Used," and "What Hill-Climbing Performance Should be Specified for Highway Freight Vehicles and Combinations?"

R. C. Coleman, of the American Safety Tank Co., will lead a fire control panel; and Fred McClain, of Socony-Vacuum Oil Co., will give a table-top fire-protection demonstration. W. Earl Givens, Jr., of Geo. F. Alger Co., will speak on the subject, "What Rate of Interest Does a Safety Program Pay?"

Besides technical papers there will be round table and panel discussions which should produce a forum of vital interest to all fleetmen.

N. Y. "Ton-Mile" Tax Now Due

On March 17 the New York State Tax Commission fixed March 31 as deadline for payment of all taxes due on its highly controversial "ton-mile" tax. These are retroactive to the time the bill went into effect on Oct. 1. Three days earlier the Court of Appeals de-

(TURN TO PAGE 203, PLEASE)

DATES and DOINGS

- APL. 7-9—National Truck Leasing System Seventh Annual Meeting, The Conrad Hilton Hotel, Chicago, Ill.
- APL. 7-9—Seventh Annual Meeting and Lubrication Show, American Society of Lubrication Engineers, Hotel Statler, Cleveland, Ohio.
- APL. 7-10—American Gas Assn. and Edison Electric Institute Joint Motor Vehicle Committee Annual Meeting, Benjamin Franklin Hotel, Philadelphia, Pa.
- APL. 16-17—Pennsylvania State College, Institute of Public Safety Refresher Course for Motor Fleet Supervisors, Penn State Campus, State College, Pa.
- APL. 25-28—New England Regional Automotive Show, Mechanics Bldg., Boston, Mass.
- MAY 5-7—American Transit Assn., Region 7 Meeting, Multnomah Hotel, Portland, Oregon.
- MAY 5-7—Automotive Engine Rebuilders Assn. 30th Annual Convention, Plaza Hotel, San Antonio, Texas
- MAY 5-9—Pennsylvania State College Driver Trainers Course, Penn State Campus, State College, Pa.
- MAY 6-8—Fourth Highway Transportation Congress, National Highway Users Conference, Mayflower Hotel, Washington, D. C.
- MAY 12-15—American Trucking Assns. Spring Meeting, Deshler-Wallick Hotel, Columbus, Ohio.
- MAY 14-19—National Tank Truck Carriers 4th Annual Mid-Year Meeting, Hotel del Coronado, Coronado, Calif.

- MAY 15—Annual Convention, Rhode Island Truck Owners Assn., Hotel Narragansett, Providence, R. I.
- MAY 15-17—Annual Convention, Georgia Motor Trucking Assn. Inc., Hotel Oglethorpe, Savannah, Georgia.
- MAY 18-19—American Petroleum Institute, Copley Plaza Hotel, Boston, Mass.
- MAY 19-23—Pennsylvania State College Motor Vehicle Maintenance Supervisors Course, Penn State Campus, State College, Pa.
- MAY 20-23—American Transit Assn., Region 2 Meeting, Bellevue-Stratford Hotel, Philadelphia, Penna.
- MAY 22-24—Annual Convention, Washington Motor Transport Assn., Inc., Hotel Olympic, Seattle, Washington.
- JUN. 1-6—Society of Automotive Engineers Summer Meeting, Ambassador and Ritz-Carlton Hotels, Atlantic City, N. J.
- JUN. 5-7—Texas Motor Transportation Assn. Annual Convention, Driskill and White Plaza Hotels, Corpus Christi, Texas.
- JUN. 6-7—Pennsylvania Motor Truck Assn. Annual Meeting, Penn-Harris Hotel, Harrisburg, Pa.
- JUNE 12-15—National Truck, Trailer & Equipment Show, Pan Pacific Auditorium, Los Angeles, Calif.
- JULY 18-19—Motor Transportation Assn. of South Carolina Annual Convention, Ocean Forest Hotel, Myrtle Beach, S. C.

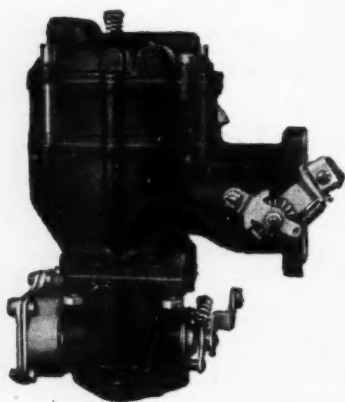
Will he Buy Your Truck Next Time?



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and
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CARBURETORS



No manufacturer could long exist in the competitive commercial vehicle field without drawing heavily on previous owners for new vehicle sales. It is perfectly obvious, no owner would buy the same make vehicle again and again unless it has delivered satisfactory performance. Therefore, it is just good business to see that every component contributes its share toward building owner loyalty. That's why manufacturers whose vehicles are Zenith* equipped measure carburetion costs in lasting terms rather than initial expense. In the field of heavy-duty carburetion, one name, Zenith, has stood for lasting satisfactory performance for over a quarter of a century. Zenith's rugged construction, strong idling, freedom from stalling and response to every demand make it the engineers' choice. For good will, it's good business to specify the best—Zenith for lasting performance.

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BULLETIN BOARD



Looking for Trouble

There's a lot of talk about drivers being responsible for safe driving, and when there's an accident, it's usually the driver who catches hell. The rest of us sit back on our respective reputations and tsk, tsk!

But an accident may be caused indirectly by scores of things that never show up in the investigation. And some of these causes can be laid in the respectable laps of the mechanics—yes the laps of every man in the fleet.

For example, an engine conks out on a bridge, and the truck is hit by some dope in the back who's watching the boats go by. Who is to blame—indirectly?

The driver attempts to pass a slowly moving vehicle, and finds too late that she coughs and hiccups when she is goosed. An oncoming car telescopes him. Who's indirectly responsible?

A tire blows on a curve and puts the rig through a fence. True, the guy may have been making up time lost at the last diner—but who didn't catch that defective casing?

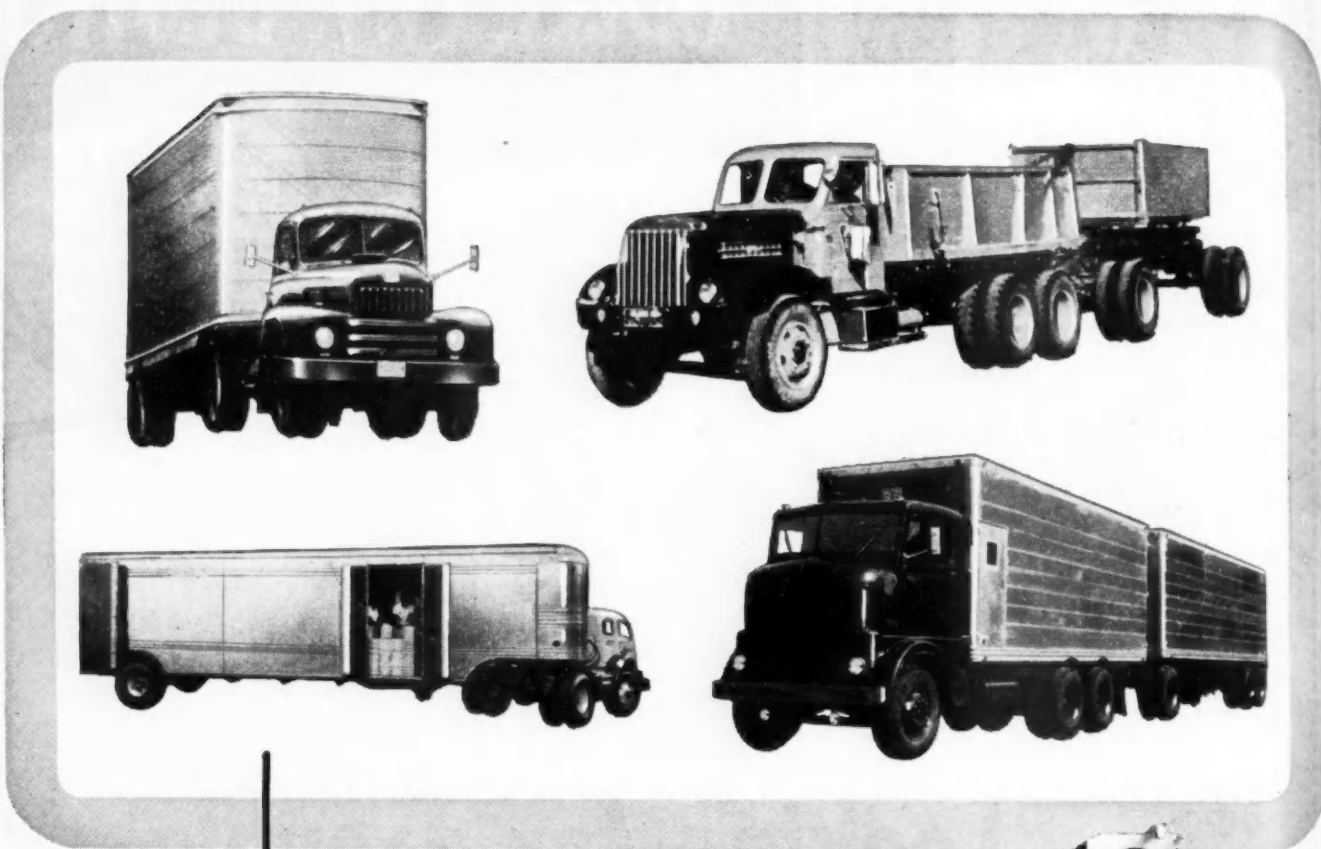
The driver pulls on a gal in a red coupe just as she pulls out to avert a mud puddle and a wash job. He gets her skirt—fender skirt. Who's holding the bag? The driver gets tagged for it because he should have passed safely; but a good horn would have saved the day. Who didn't check it?

The driver snags another truck at an intersection. Usually that's chargeable. But to whom? His brakes should have stopped him in 30 feet at 20 miles per hour. But they didn't. Will the trucks you inspect do it?

Every man in this outfit is working on this safety program, be he driver, mechanic, washer, lubrication engineer, or office boy. So let's get off the tsk, tsk wagon and start looking for trouble—the kind that figures in accident reports.

Stop *thinking* safety and start *working* accident prevention. That's the way we'll keep trucks trucking, and men working, and pedestrians living. For accidents caused by mechanical defects are ridiculous—but they are ridiculously high on ICC reports.

To Keep THESE Dependable . . .

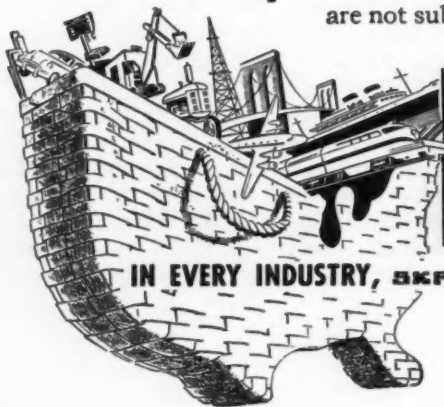
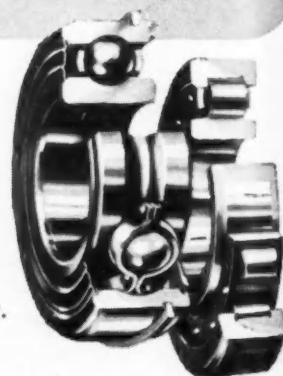


Use THESE **SKF** Bearings from your **SKF** Distributor

When you have a bearing replacement job, the man to call for those replacements is your local **SKF** Distributor.

Why?

First of all, because your **SKF** Distributor gives you fast, local service, helps you keep the right bearing in the right place. Second, because **SKF** Single-Row Deep Groove Ball Bearings, with snap rings and shields, efficiently keep lubricant *in* . . . keep dirt *out*. They have very high capacity for both radial and thrust loads. Third, if you need cylindrical roller bearings, remember that **SKF**'s design for high radial capacity—ideal for large vehicles. The crowned rollers eliminate edge loading. Sturdy machined bronze retainers are not subject to vibration wear. Ground flanges assure true running.



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Finally, you can depend on **SKF** quality . . . always.
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One of the stenographers in the large trucking company office was regaling her bored fellow workers with the tale of her adventures on the previous night. "This handsome guy," she said, "took me up to his apartment and showed me a closet that contained at least fifteen absolutely perfect mink coats. And, what do you know, he gave me one of them."

"What did you have to do?" queried Catty Cora, the office skeptic.

"Oh, just shorten the sleeves a little," replied the steno.

CCJ

Steno Lou: "Are you keeping a hope chest?"

Steno Sue: "Heck no; with a chest like mine there ain't no hope."

Salesman, at door: "I have here something that will make you a happier man and bring you a host of friends."

Carburetor Specialist: "Okay, I'll take two fifths."

CCJ

The tank truck driver was on a long haul and growing very tired. Shortly a neon-lighted roadside diner came into view and he braked to a stop, walked in and handed the waitress two vitamin pills, and asked her to dissolve them in a bowl of steaming clam chowder. After a very long interval he asked the waitress what was holding up the works and why she hadn't served him his order of clam chowder.

"Take it easy, Mac, take it easy. You'll get your soup just as soon as we can get the clams to lie down."

CCJ

On his way to render aid to a unit which had suffered road failure, the Fleet Road Mechanic became hopelessly lost after being forced to take a fifteen-mile detour in the Tennessee hill country. Finally, he rolled to a stop at a desolate crossroads and yelled to a mountaineer driving a load of hay: "Hey, Cornsilk, is this the way to Knoxville?"

The mountaineer looked up in feigned astonishment. "By cracky, stranger, how in tarnation did you'n know my name wuz Cornsilk?"

"Oh, I just guessed it," answered the Road Mechanic.

"Then, by grannys, hit'll suit me a right smart heap if'n you'll jis guess yore way to Knoxville."

Irate Wifey: "Well, what excuse have you got for coming home at this hour of the night?"

Maintenance Superintendent: "Well, my dear, I was playing golf with some friends and . . ."

Irate Wifey: "What! At 2 A.M.?"

Maint. Supt: "Sure. We were using night clubs."

CCJ

Traffic Manager: "I thought you were ill yesterday, Smith?"

Rate Clerk: "I was, sir."

Traffic Manager: "You didn't look like a very sick man when I saw you at the track."

Rate Clerk: "You should have seen me after the fourth race, sir."

CCJ

The state trucking association had just given its big annual dinner for members. The wife of the tank fleet operator was giving him the usual third degree when he got home that night: "How was the dinner?"

T. Fleet Operator: "Fine."

Wifey: "Who was there?"

T.F.O.: "Everybody."

Wifey: "What did the women wear?"

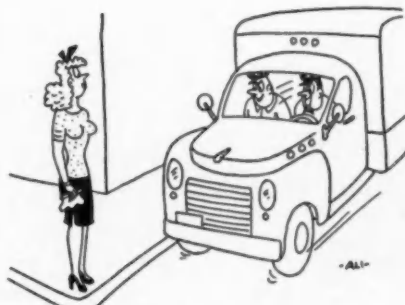
T.F.O.: "Nothing above the table. And I didn't think to look under."

CCJ

Safety Director: "Honey, I just can't warm up to that boy friend of yours. He rattles on just like a flivver. He has too much exhaust and, in general, I'm afraid he's just a flat tire."

Daughter: "I know, Dad, but he has such a wonderful clutch."

"Ci Ci Jay"



"I'll gun the engine when I pass her. Watch her vibrate."

Safety Sadie: "If you have two wishes, what would they be?"

Catty Cora: "Well, I'd wish for a husband."

Safety Sadie: "That's one."

Catty Cora: "And then I'd save the other until I saw how he turned out."

CCJ

Fatty Floorboarder, our City Driver, says that a man's only young once, but if he plays his cards right, once is enough.

CCJ

City Judge: "Well, Henry, I see they have you charged with drunkenness again. Didn't you promise me when I let you off lightly last month that you would quit heavy drinking. Just take a social dram or two now and then?"

Truck Mechanic: "Yes, your honor, I did, but I have a perfectly good excush."

City Judge: "It had better be good unless you want to take a vacation from that knucklebusting occupation of yours. Let's hear it."

Truck Mechanic: "I got into bad company, your honor. I had a quart of whiskey and my three buddies didn't drink."

CCJ

Truck Mechanic: "Sweetie Pie I dreamed about you last night. I dreamed that I held you in my arms and loved and loved you. What's that a sign of?"

Beauteous Babe: "It's a sign that you've got more sense when you're asleep than when you're awake."

CCJ

Air Brake Specialist: "But how can you have the unmitigated gall to try to sell me a bottle of hair tonic, when you have no hair yourself?"

Slick Headed Barber: "Cool down, buster. There ain't a thing wrong with that. I know a guy who sells brassieres."

CCJ

"How did you say your brother died?"

"He fell through some scaffolding."

"What was he doing up there?"

"Being hanged."

CCJ

Weavin' Willie says: "The gals used to show the latest styles but now the latest styles show the girls."

(Resume Work)



U.S. ROYAL

RAYMASTER

**The Specialized
Highway Truck Tire**

Specialized to break records in Mileage—Trip-time—Economy

New records—every day! So say the men who *know*: High-speed, long-haul truckers all over the country. That's *proof*—the U. S. Royal Raymaster is *specialized* for highway work like no other tire!

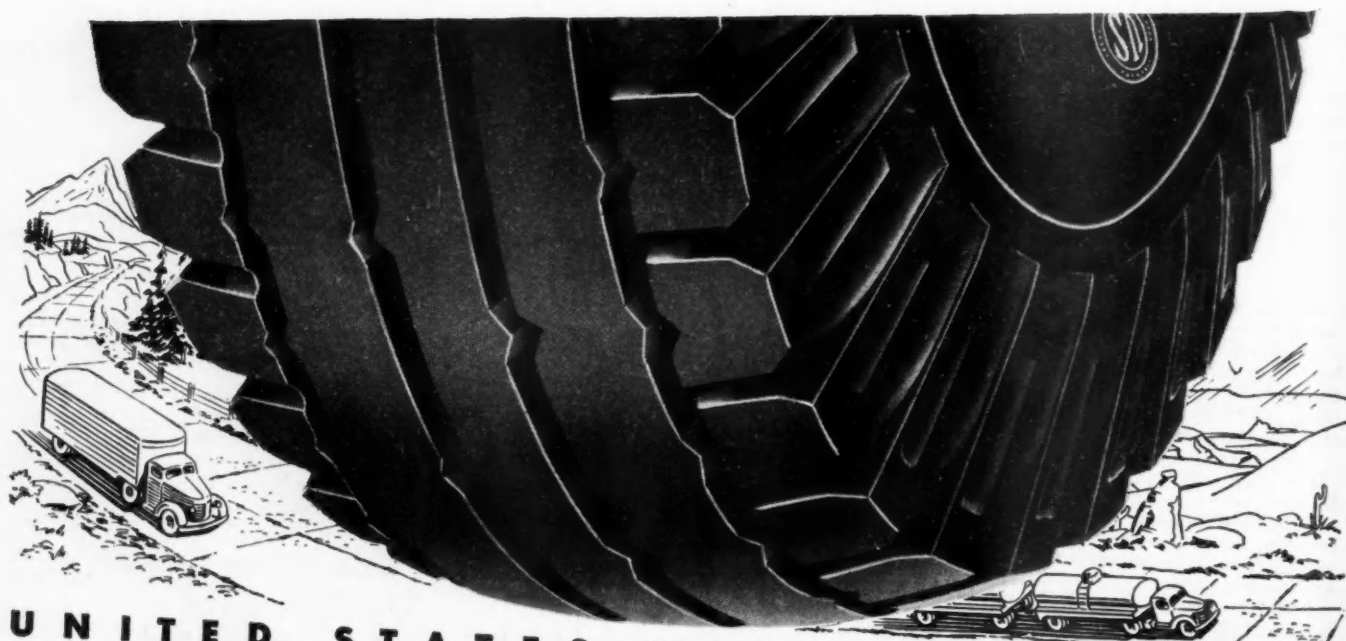
MORE MILEAGE! Tread and undertread are deeper, made of special-compound rubber... give you longer wear.

FASTER TRIP-TIME! Runs cooler! Rib-type tread and ventilating shoulder windows prevent heat build-up.

MORE ECONOMY! Cuts tire costs up to 50%! Tougher safety-bonded carcass, double shock-pads mean more recaps.

SEE and COMPARE

Here's the place—your U. S. Royal Dealer's. His complete U. S. Royal line—his cost-cutting Fleet Service Plan can mean large savings to you. Phone him today—he's in the Classified Telephone Book.



UNITED STATES RUBBER COMPANY

COMMERCIAL CAR JOURNAL, April, 1952

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PUBLICATIONS

FOR YOUR CONVENIENCE USE THE POSTCARD ON NEXT PAGE

L136. Rules of the Road

A new pocket-sized booklet entitled "Rules for the Road for all 48 States" is now available to the fleet field. The information, arranged in easy-to-read form, is comprised of charts and maps providing data that every driver needs. Speed laws for various sections are provided in chart form; main highways are located on a map, and rules of the road are set up for quick checking. Included in this information are such data as passing on hills, parking on highways, hitch-hiking, required rear reflectors, and dimming of headlights as required in each state.

Write L136 on the postcard for your copy of this handy booklet.

L137. Tire Inflation Chart

A truck tire load and inflation table for trucks and buses in highway service has been prepared by National Fleet Service, New York. With this chart, a service man may figure instantly the recommended loads for 57 different tire sizes at various inflation pressures.

The pressures conform to the Tire and Rim Assn. standard figures. The chart is printed on stiff cardboard, 17 in. by 11 in., suitable for permanent display.

The size range begins at 6:00 x 17, six-ply. The vertical columns are headed by the tire pressure, graduated in 5-lb differentials from 40 lb to 80 lb respectively. Following the tire size indicated, the tire man can locate the maximum load recommended at the various pressures. The

highest load recommended for a particular tire size and pressure is underlined.

In the case of dual tires, the load is figured at twice the loads of corresponding singles. The largest tire size and pressure covered is the 14:00 x 24 at 80 lb pressure with a load maximum of 8525 lb. For your copy of the chart, write L137 on the postcard.

L138. Spark Plug Chart

A wall chart 14 in. x 22 in. with a hanging grommet will give the spark plug number and gap size for standard or transport type spark plugs made by Auto-Lite. The list includes trucks, buses, tractors, garden tractors, and power mowers, divided by make, type, and model of vehicle.

All recommendations are based on new engine requirements, under normal operating conditions. The entries are carefully cross-referenced, and where a variation occurs which is not covered by the chart, direct reference is made to another Auto-Lite publication or catalog.

For your copy of this wall chart, mark L138 on the post card.

L139. Transit History

From the cave man to a modern bus in 15 pages, ACF Brill traces the history and development of urban transportation. The cave man episode related to his discovery of the wheel, the need for a method of moving himself and his belongings from one locality to another, and the application of this wheel to a platform.

From this remote root of modern transportation, the booklet goes into transportation methods inaugurated in American cities and towns. It discusses the first "horsecars" with their uncomfortable riding facilities and the storms of public protest which their appearance on the streets aroused.

For your copy of this brief history of the transit industry, write L139 on the post card.

L140. Keeping Records

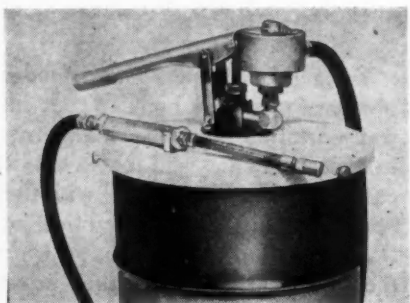
What to keep and what to destroy is the basic problem discussed in a booklet entitled "A Basic Plan for Record Retention and Destruction" now available from Remington Rand. The booklet is based on a study made by the National Records Management Council, which recommends that 35 per cent of the records in an "average business" should be destroyed, 30 per cent transferred to less costly space, 20 per cent retained currently, and less than 10 per cent should be kept permanently.

From this basis, the booklet develops a records handling system, giving step by step a method which a business may use in determining which records should be kept and which should be destroyed. The matter of preservation of records is also discussed at length.

At the conclusion of the 21-page treatment of the problem, the publishers have listed the book and paper material which should be kept, how long kept, and other recommendations for each item. For your copy, write L140 on the post card.

NEW Products

ADDITIONAL DETAILS AVAILABLE UPON REQUEST VIA POSTCARD



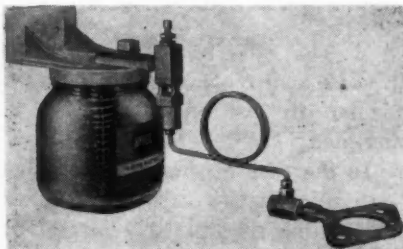
P185. Grease Guns

Three new push-type, hand grease guns developed by Stewart-Warner Corp., Chicago, Ill., provide for lube work on universal joint, water pump, steering gear and wheel bearing. Alemite Model 7510 has a combination priming, spring for chassis lubricant and ram prime for heavy lubricant. It develops up to 3000 psi, is 23 in. long and holds 10 oz of lubricant.

Alemite Model 7517 is a steering gear gun which loads from any low pressure control valve. In addition, it may be loaded through its two-way nozzle by suction from the original lubricant container. It has a floating type follower which keeps the handle from protruding when the gun is filled. Capacity is 12 oz; length 24 in.

P186. Respirators

Two types of respirators have been developed by the DeVilbiss Co., Toledo, Ohio, for use in areas where there is a low concentration of fumes or in areas where there is a light concentration of nuisance dusts. A third type filter respirator approved by the Bureau of Mines is available for use against poisonous and disease producing dusts.



P187. Vapor Lubricator

An upper cylinder vapor lubricator for gasoline or LP engines has been introduced by United States Aviox Co., Niles, Mich. It consists of an oil container suspended from a bracket which may be mounted on the cowl. A sight-feed attachment limits the flow of oil to the carburetor to a maximum of 40 drops per minute. The feed control is connected to the carburetor by a fine-gage copper tube.

In operation, the vacuum at the carburetor throat creates an equal low pressure area in the vaporizer which in turn sprays the lubricant into the carburetor. The consistency of the vapor, according to the manufacturer, is about that of cigarette smoke.

P188. Cold Solder

A synthetic metal applied with putty knife, which adheres to all metals including aluminum, has been marketed by A. L. Okun Co., Flushing, N. Y., under the trade mark "No Torch." The manufacturer states that the material hardens in minutes, and may be used for fill in body-fender work and for cracks or pits in metal surfaces.



P189. Fork Truck

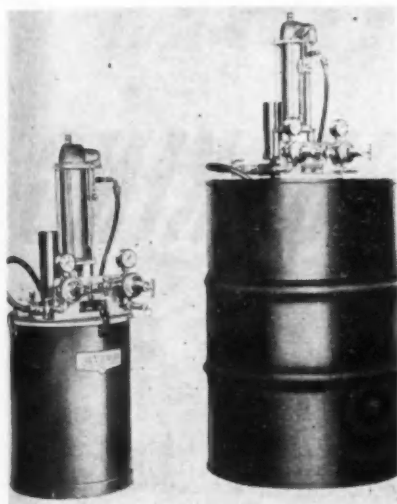
Lewis-Shepard Co., Watertown, Mass., is announcing the development of a new Electric Fork Truck (1500 lb capacity) specifically designed for docks, warehouses and terminals. The SpaceMaster "59" model features a stand up drive; has a 59-in. turning radius for maneuverability in narrow aisles; extra pep in lifting (50 F.P.M. loaded) and extra "go" in hauling (6 MPH).

P190. Fire System

A packaged automatic carbon dioxide fire extinguisher system has been made available by Walter Kidde & Co., Inc., New York. It will protect an area up to 6000 cu ft from normal industrial types of fires originating from inflammable liquids. The carbon dioxide required to protect an area varies from 50 lb for a 300 ft area to 300 lb for a 6000 cu ft area. The system operates on a rate-of-rise detector. The package is complete with all fittings and instructions for installation.

The latest developments in parts, accessories, equipment and tools for the fleet shop

FILL IN CARD WITH APPROPRIATE NUMBERS FOR MORE INFORMATION



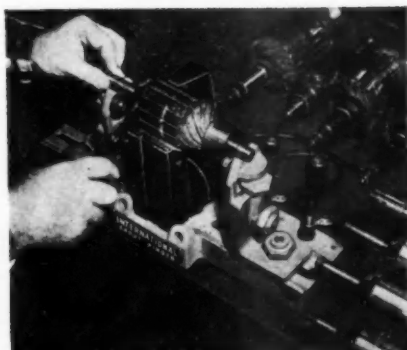
P191. Material Pump

Advantages of the large paint circulating systems used in major industries' spray painting divisions now are available for smaller scale maintenance painting, production finishing and coating operations with the introduction of the DeVilbiss Co.'s Type P-QBD volume delivery material pump.

The new pump is designed to deliver material directly from the original container to spray guns, with a resultant sharp reduction in spillage and waste as well as the time-loss created by frequent replenishment of material.

Two models of the pump are being produced—one designed for use with common types of 55-gal drums, while the other comes equipped with a 10-gal hinged lid tank into which a standard 5-gal paint container can be fitted.

Both models are adapted for simple direct hose line connections, with which as many as six spray guns can be operated.

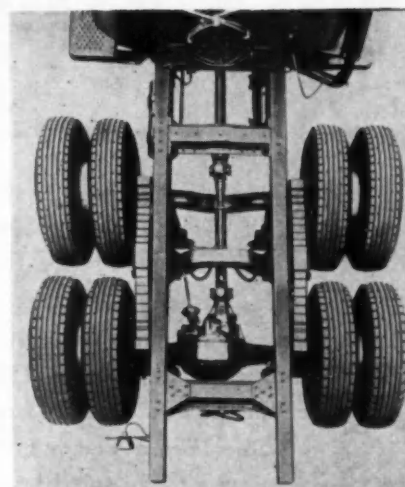
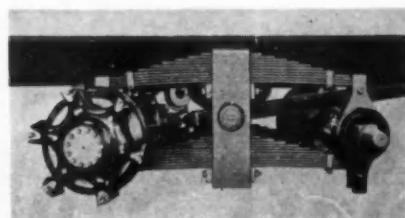


P192. Armature Tester

A bench-mounted device for testing small armatures has been developed by International Products Mfg. Co., Chicago, to replace the common growler. In use the armature to be tested is placed through the support rings located at each end of the tester. These are adjusted so that there is 1/16 in. between the armature and the transformer poles, located in the frame. By pressing a foot switch and actuating the 6-v transformer in the housing, the armature rotates, and will stop when a shorted coil is reached. The shorted coil will be located under the pointer, which may be seen at the top of the test stand, or on the opposite side of the armature.

P193. Direction Signal

A directional signal light with a Magnalume plastic lens in which no reflector is needed has been introduced by Arrow Safety Device Co., Mt. Holly, N. J. Finished in baked enamel, the Magnalite comes in three types: single faced, which can be bracket mounted, double-faced for front fenders, and a flush model for body mounting.



P194. Third Axles

Third axle units designed for 34½ in. and 36½ in. truck frames have been introduced by Automotive Products Co., Detroit. Among the new features is a new type spring consisting of nine plates 3½ in. wide by ½ in. thick. A flat plate spring clamp with a wedge block adjustment and double wrapped main leaf eyes give the spring maximum flexibility with maximum load strength.

P195. Dock Boards

Light weight dock boards made of magnesium, strong enough for heavy loads, light enough to be moved into place at the tailgate by one man, are offered by Magline, Inc., Pinconning, Mich.

(TURN TO PAGE 258, PLEASE)

CO

**Warner Electric Brakes provide
two independent braking systems
plus precision synchronization for**

SAFE STRAIGHT-LINE BRAKING

With Warner *Electric* Brakes your drivers have a *double* measure of safety.

For, Warner *Electric* Brakes provide an independent trailer braking system which synchronizes with tractor brakes. This dual braking system means a *double* safety factor!

Warner *Electric* Brakes give you *precision synchronization* for balanced braking . . . instantaneous, uniform braking of *all* wheels on both the tractor and trailer. No time lag in the action . . . braking power is applied with the speed of elec-

tricity for split-second performance . . . lets the driver apply and release braking power exactly as he needs it to match every traffic or road condition.

Precisely synchronized Warner *electric* braking action means smooth, *straight-line* deceleration and stops. Tractor and trailer act as a single unit to guard against skidding, diving, sliding and jack-knifing . . . to bring your drivers a new high in braking safety. Send today for free bulletin "Six Steps to Better Braking."

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ELECTRIC BRAKES
FOR TRUCK TRAILERS

HERE'S HOW ELECTRIC



"WARNER WAY" . . . all brakes reach full power together to keep tractor and trailer in line . . . safe, straight-line braking for gradual or emergency stops.

1952

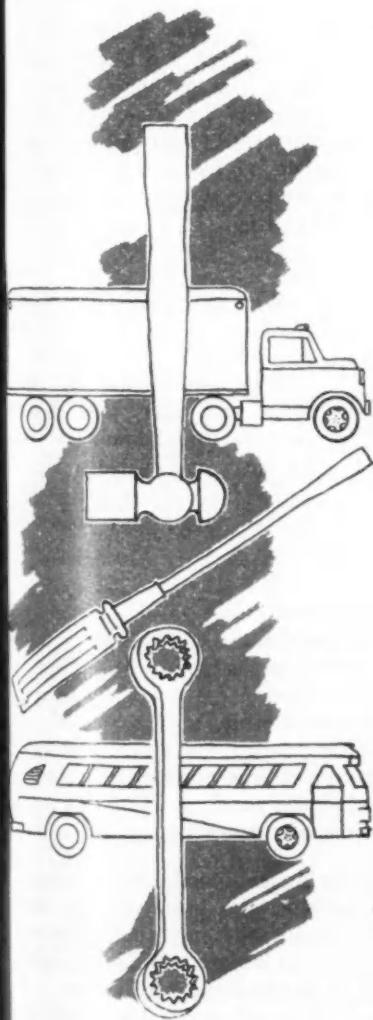
SECTION

1

Truck and Bus Maintenance

Maintenance Instructions

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THE next 55 pages contain some of the most comprehensive service information available today in any one publication. The truck and bus maintenance data has been brought up to date with virtually all of the vehicle manufacturers contributing. Here you will find accurate specifications and adjustment data that will aid you in getting more miles from your maintenance dollar. Be sure to save this issue.

BASIC FLEET MAINTENANCE—An Outline of

PART I—The WHAT, WHEN, WHY and HOW of Preventive Maintenance

PART II—The Driver, the Mechanic, the Supervisor, the Owner or Operator and their responsibilities in Vehicle PM

PART III—A suggested check list for maintenance control

The



Preventive maintenance, as applied to commercial vehicles, carries as many definitions as there are fleets. Most fleets have some system, though procedures may vary from a hasty check over whenever the truck is available, to a scheduled service designed

scientifically to provide for lower operating costs. A good PM system should have as its objectives the following:

1. Improved safety.
2. Reduced road failures.
3. Uninterrupted schedules.
4. Better gas and oil mileage.
5. Longer parts life.
6. Improved public relations.

Most of these points are self explanatory. Properly inspected and adjusted vehicles do not break down on the road, where they are traffic hazards. They are more easily controlled in emergencies and therefore less subject to accidents. They make the most efficient use of fuel and get more miles to the quart of oil. Vehicle life span is increased because defective parts and worn parts are replaced and adjustments are made before major trouble occurs. And finally, they can keep up with traffic and keep out of tailgating conditions and traffic jams that result from stalled or maladjusted vehicles. With cleaner, safer, more dependable vehicles, public relations are improved.

The



Specifically, PM consists of a few simple practices set up at intervals corresponding to the requirements of the fleet, each contributing in various proportions to operating efficiency. Basic practices consist of:

1. Inspection
2. Adjustment
3. Cleaning
4. Painting
5. Lubricating
6. Tightening

Replacement or rebuilding of parts may or may not be considered a part of the PM. However, the whole routine is set up as a guide to vehicle needs, and when units are rebuilt or replaced, the end result is the same. Therefore, in this article we will consider preventive maintenance as any practice or procedure performed on the vehicle (from inspection to overhaul) in the interest of attaining improved performance and longer vehicle life.

The



Without doubt few fleets have arrived at the exact PM requirements consistent with the greatest savings in time, labor and parts life. Some tend to overmaintain; others let wear and maladjustments go too long. There are several factors which may influence

the PM program:

1. Annual mileages.
2. Routes and road conditions.
3. Weather and climate conditions.
4. Type of operation (schedules, cargo).
5. Loads and speeds maintained.
6. Type of drivers (extent of training).
7. Size and type of vehicles used.
8. Age of vehicles and replacement practices.
9. Life expectancy of individual parts.
10. Skill and training of the mechanics.

Most of these conditions are in a continual state of change, so it is the progressive operator who has arrived at the exact PM points. The solution is found only after an extensive study of each and every contributing factor in the light of past experience as well as the experience of others.

The fleet that can tailor PM to mileage or time alone is indeed fortunate, for route conditions change with the seasons. Winter weather, for example, may require more attention to the oil, tires, steering, suspension system; while wet

Recommended Practices

The following pages contain a study of various phases of maintenance, obtained from conferences, articles, manuals and experiences of hundreds of fleet operators. It is thought that this general approach to PM problems will be valuable to fleets as a guide in setting up schedules and routines—or for checking against present PM practices.



Several factors influence the setting up of the PM program itself. One or more of the following procedures is used in most fleets in vehicle inspection: That is, PM is carried out by:

1. Driver checks of equipment.
2. Safety lanes, or daily inspections before the trip.
3. A lubrication-inspection, set up as a single operation.
4. The A, B, C, etc. service, based upon a progressive inspection procedure with separate forms for each inspection.

Driver inspections must be tailored to the interest, skill and training of the driver. Driver's checks of equipment can often serve as a basis for scheduling work. Complaints, for example, on such items as "hard steering, poor brakes, road wander, engine noises, defective lights, rough idle" and such should signal an inspection and related maintenance.

A system of quick checks pulled by a competent inspector before the trip, sometimes referred to as a safety lane check, has been used with success in many fleets. Particularly in over-the-road operation, where the shop does not always have access to the vehicles, the safety lane may work out to advantage. As the name implies, particular attention is given units that must be intact in the interest of safety.

A lubrication-inspection system makes use of mechanics at the grease pit or island, who examine all parts of the vehicle as it is being lubricated. This system accomplishes both jobs at one time, assures the operator that the vehicle is ready for the road—though it does tie up a skilled mechanic at the time.

In modifications of this system, inspection teams are set up, whereby men work in pairs or groups, or they may specialize with respect to electrical work, brake service, tire checks or lubrication. Ordinarily this is practiced in fleets dispatching a group of vehicles at one time. Again, it is usually only a larger fleet who have specialists to use in this way.

The A, B, C system of inspection is by far the most popular system of controlling PM, and little needs to be said here. The following pages will outline suggestions for units and assemblies that should be covered in a comprehensive inspection procedure. Any system, however, will need to be modified appreciably in its adoption to the requirements of your fleet.

(TURN TO NEXT PAGE, PLEASE)

conditions may require more service of wheel bearings, brakes, and lubrication points.

One fleet operating on strict schedules and at fast speeds must of necessity give more attention to engine bearings, valves, alignment, tires; while another in stop-and-go driving can expect to experience more trouble with sludge, carbon, clutch plates, and batteries.

In off-the-road operations where mileage is not a yardstick, PM can be scheduled on the basis of fuel consumed, as this is a better index to the amount of work done by the engine. This practice may be used in fleets where engines idle over long periods, where load factors vary appreciably between vehicles, where speeds vary greatly.

The drivers themselves influence PM requirements not only by the care given the equipment, but also in relation to their capacities for catching and reporting pending troubles. Driver reports, properly filled out, may be influential in extending periods between inspections.

The extent of training of the mechanic, as well as his thoroughness in doing the work, can materially affect the PM scheduling. Training and selection of mechanics is thus important. Some men have an uncanny knack of locating impending troubles, are adept with tools and instruments used in PM, while others may tend to let wear go too long.

The practice of setting up PM schedules on the basis of expected parts life is a subject relatively new to most fleets. More and more emphasis, however, is being placed on a scientific study of failures in a move to anticipate safe replacement practices. Figures given later and taken from CCJ surveys on parts life in a wide range of operations may suggest to some an approach to this practice. These, however, should always be related to include fleet applications.

Analysis of crankcase oil, performed by operator or an outside laboratory, is often used as a guide to PM requirements. Various kinds of contaminants and foreign material will suggest the need for engine adjustments or parts replacement and in this way catch troubles before further damage is done. Inspection periods can be often based on such oil reports.

The Driver's Responsibility...

Good drivers and good driving are major factors in long vehicle life. The driver is directly responsible, from the standpoint of vehicle care, for control of speed, braking and operation under duress. He is responsible for making vehicle checks prior to the trip and during the trip in accordance with company policy. He is responsible for reporting all mechanical defects as they arise. He is indirectly responsible for a number of duties outlined below. However, fleet policy will determine these duties.

1. In Safety Checks Prior to the Trip—

While policy will determine the driver's part in the following checks, it should be emphasized that no driver can afford to overlook making safety checks as outlined below—in the interest of human life: The following items figure into vehicle operating safety:

1. Brakes—for application, reserve pedal, side pull.
2. Horn—for operation.
3. Windshield wiper—for operation, wear of blades.
4. Tires—for cuts, bulges, bruises, fabric breaks, inflation.
5. Steering—for excessive play, loose nuts, bent parts.
6. Springs—loose U-bolts, deflection.
7. Lights—for operation of head, dim, parking, tail and clearance, flares and safety equipment.
8. Fifth wheel—for locking, lubrication, mounting.
9. Fuel system—for evidence of leakage.
10. Oil leaks.

2. In Checking Dash Instruments—

The driver should receive instruction in the importance of reading instruments and should know what malfunctioning means in terms of mechanical failures of the engine. He should know whether to 1. stop, 2. continue under caution, 3. call the shop for instructions, when instruments show trouble. Thus, he will know that:

a. Temperatures—under 140 will cause crankcase dilution and sludge; that temperatures over 212 indicate overheating and eventual breakdown of oil and destruction of rings, cylinder walls, valves, bearings, etc.

b. Oil pressure—that the oil gage shows the distribution of oil throughout the engine working parts; that low pressures may indicate worn bearings, restricted lines, leakage, thin oil, overheating of the crankcase.

c. Charge rate—that the ammeter indicates the amount of charge being given the battery and functioning of regulator; that a steady discharge indicates a short, defective regulator, or low battery and will cause light and eventual engine failure; that overcharge will ruin the battery or the generator if operation is continued; that no charge means a balanced system provided regulator is functioning correctly.

d. Engine speed—that the tachometer indicates engine rpm, guides the driver in selection of gears and in maintaining the highest torque; that exceeding recommendations

1. In safe operation
2. In reading instruments
3. In making scheduled checks
4. In use of trip reports

may pound out bearings, break valves; that low rpm under load (lugging) may damage bearings, score cylinder walls, contribute to crankcase dilution and blowby.

e. Air pressure—that the air pressure gage shows the amount of air available for brake applications; that low pressure (below 60 lb) is dangerous and that if the compressor doesn't start building up when pressure falls below 85 lb, there is something wrong. The driver may be instructed to make a rough, quick check of the air brake system before starting out. Standards set up by the individual fleet will guide him in these checks. In this respect the pressure drop for each full brake application can indicate the condition of the lining and linkage adjustment.

3. Making Checks of Equipment on the Road—

At stops for fuel, food or sleep the driver should check over his equipment. As often as indicated by fleet policy and the driver's own success and safety he should check:

1. Brakes—for overheating.
2. Tires—for overheating, pressures, cuts, stones.
3. Lights (at night) clearance, tail, marker, etc.
4. Engine—for evidence of oil, gasoline, water leakage.
5. Steering system—for evidence of looseness.
6. Suspension system—for load distribution.
7. Trailer connections—for fifth wheel lock, brake and light lines.

4. Filling Out Inspection Sheets After the Trip—

With constant attention to his vehicle, before, during and after the trip, the driver will be in an excellent position to evaluate the mechanical condition of his vehicle.

It is therefore logical that this information should be made available to those responsible for the maintenance of the vehicle. Equipment comments by the drivers completed after every run should be a component of company policy and integrated with the PM program. The type of form to be used for driver's reports can be a check-off list or a blank or a combination with blank portion labeled "remarks." Whatever form is used, the information thereon should receive sincere attention from the shop, for disregard of this data is immediately reflected in the attitude of the drivers toward this phase of the PM program and the information they will furnish. Analysis of driver comments can furnish a valuable yardstick for judging the efficiency of the PM program.

The Mechanic's Responsibility ...

1. In Using Tools and Equipment—

The mechanic and the supervisor jointly are responsible for work being carried out on a precision basis, complete and properly checked. The following requisites determine the success of the final job:

- Precision tools and accurate testing instruments.
- A logical and practical sequence in following out the work.
- Adequate information, data, specifications to enable the mechanics to fit and adjust.
- A procedure for testing the vehicle on the road or on a dynamometer prior to handing it to the driver.
- Careful recording of the work done for shop records.

Accurate work cannot be expected without a complete assortment of tools and testing instruments. Precision equipment cultivates precision work. Here are suggested tools and instruments for comprehensive PM checks:

Compression gage	Torque wrench
Vacuum gage	Timing light
Feelers	Dial micrometer
Gas analyzer	Spring tension gage
Cam dwell meter	Hydrometers (Battery & Coolant)
Distributor tester	Tire pressure gage
Voltmeter	Spark plug testers
Ammeter	Wheel alignment instruments
Chassis dynamometer	Tachometer
Caster & Camber gages	Air compressor

The following tools will be required for general engine work:

Cylinder gage	Pin hole grinder or hone
Inside & outside mikes	Rod aligner
Ridge remover	Ring filer
Cylinder hone	Ring compressor
Groove cleaner	Valve seat grinder & refacer
Land tool	Guide puller
Chamfering tool & drill	Bearing oil leak detector
Internal grinder or boring bar	Babbiting equipment
Hone-vacuum suction equipment	Line boring fixture
Crankshaft regrounding	Cam shaft bearing puller
Piston grinder	Engine dynamometer
Piston resizer	

2. In Adhering to Specifications—

Many of the tools listed above are designed for checking performance and improving engine power output. It is most important that such tools are used to check and adjust during routine PM inspections, and also to check and adjust units that have been rebuilt. The chassis dynamometer permits the mechanic or inspector to analyze exhaust gases and make carburetor adjustments under varying load conditions, while ignition defects can be corrected under simulated road conditions all in a minimum of time. All this adds up to a vehicle tuned up to its maximum performance according to manufacturer's specifications and ready for the road—good insurance against road failures.

- In using tools and equipment
- In adhering to specifications
- In checking final work
- In recording work done

When making tests on the dynamometer there should be available to the operator all necessary data and specifications as published in manufacturer's manuals or the statistical issues of CCJ. In order to have such data available when needed, it is a good idea to keep statistical publications and instruction manuals filed in the stock room and issued only to authorized personnel on a signed chit—readily available when wanted.

3. In Checking Final Work—

All major functions of the vehicle should be checked before a job is released from the shop whether it is in for routine inspection or failure of a specific part. The routine to be followed when making an inspection should be planned in advance for each particular type and make of vehicle. The sequence of inspection operations and checks should follow through in proper order so that the continuity does not have to be repeated. By following manufacturer's specifications and recommendations, adjustments can be done in such order that a setting made according to manufacturer's specifications will not be affected by subsequent adjustments. This scheduling is very important as it definitely tends to lessen the labor necessary to perform the inspection operation.

4. In Recording Work Done—

While making a PM inspection and subsequent repairs and adjustments it is absolutely necessary that such data are recorded and entered on permanent forms. The usual method of doing this is to make up the PM forms as check-off sheets. This tends to guide the inspector or mechanic in the proper sequence of operations and also acts as a reminder to properly investigate parts scheduled for inspection. It is the function of the shop foreman and superintendent to prevent lead pencil inspections, i.e. checking the item or writing it up without proper investigation. Another advantage of check-off sheets is that they keep the amount of pencil work done by the mechanic to a minimum, which with a little care results in records that are free of greasy hand prints and are therefore legible. The ultimate use of the PM inspection sheets is a matter of management policy, but it should be mandatory that the information they contain be entered on permanent vehicle record sheets or filed with the data on the vehicle they represent. The latter system results in voluminous files which are slow and difficult to use. Data on maintenance should be readily available to management as a yardstick of shop operation.

The Shop Superintendent's Responsibility . . .

1. Setting up the Schedule—

While scheduling of PM is the responsibility of the shop superintendent, he must have the full cooperation of the owner or operator in making vehicles available at the time maintenance is required. One or more of the following factors may be used as guides to engine needs:

1. The oil consumption rate.
2. The gasoline consumption rate.
3. Engine wear as noted by the vacuum and compression tests.
4. Exhaust smoke, engine noise, oil pressure, engine power.
5. Projected parts mileage life.
6. Crankcase oil analysis.
7. Time.
8. Mileage.

The oil and gas records can tell a lot about the condition of the engine from the standpoint of carburetor adjustment, valve wear, wear in the power area, etc. When consumption rates become unusually high, or shoot upwards without apparent reason, the vehicle should be brought in for inspection or work. In many cases minor conditions can be located in this way, and the actual overhaul can be put off for a period.

Using CCJ surveys as a guide at least one shop has planned areas, work space and equipment requirements for vehicle maintenance. In a similar manner such surveys of average life of parts can be used to guide maintenance.

Most fleets are not set up to use anticipated parts mileages as a basis of replacement or overhaul. However, case histories and fleet experience should be studied closely with the thought that such a program can be adjusted to the requirements. For example, PIE has made studies to show that after a certain mileage, it is unwise to reuse, or continue in use certain parts and assemblies. Only after extensive study, however, can a fleet expect to arrive at the most economical replacement or overhaul periods based upon mileage alone. Until complete records and parts histories are available, inspection and precision tests should be made—before units and assemblies are discarded.

2. In Diagnosing Work to be Done—

It is the shop superintendent's function to diagnose the work as it goes through the shop and correlate it to the PM schedule, and to evaluate constantly the effectiveness of the schedule in relation to road failures, idle equipment, costs.

3. In Supervising the Work—

Supervising the mechanics and ascertaining that all parts of the PM program are carried out on each individual inspection is absolutely a must for obtaining the ultimate objectives of the program. Permitting mechanics to make pencil check-offs without an investigation as called for on the PM schedule cannot be tolerated. If it is not considered necessary to make the inspection, then the program needs adjustment.

1. In setting up schedules
2. In diagnosing work to be done
3. In supervising work
4. In training mechanics
5. In keeping records & costs

4. In Training Mechanics—

The momentum behind an elaborate mechanic's training program must come from management; however, the shop superintendent is responsible for the day-in and day-out endeavor to improve each man's work.

Mechanic training can be accomplished in several ways, i.e., use of training films and instructors furnished by automotive manufacturers, on the job training by instructors or by supervisors, attendance at extension courses conducted by state universities or local education authorities or matriculation at a local vocational school. Training procedures of this nature are a matter of company policy, inasmuch as they can become items of considerable expense and can involve questions of working hours and overtime.

5. In Keeping Shop Records and Costs—

In order to have an effective PM program records of repairs, parts, and units must be tabulated as well as the daily records of gas and oil.

A few simple forms and a time clock are the only equipment necessary to set up an efficient cost accounting system for the shop. The time clock and daily time cards may be the same as used for payroll purposes.

When the vehicle or unit enters the shop for inspection or repairs, a job number is issued and attached, all costs to be accumulated against this number until all repairs have been made. Daily time cards of all labor working on each job are rung IN and OUT for the actual time spent on each job number. Parts issued by the stock room are charged against the appropriate job number on a parts' card. Parts cost can be entered on the cards in the stock room or front office, dependent on the system. The daily time cards are sorted and charges entered against the job numbers usually in the main office. In this manner the mechanics only have to write the job number against the appropriate time on their job cards, which helps to prevent records from becoming greasy and illegible from excessive handling. When the job has been completed, all the records are accumulated and entered in the vehicle record form which should be large and complete enough to last for the life of the vehicle.

Costs on unit parts are accumulated in the same manner, except they are not entered on a vehicle record sheet until the unit has been installed.

Records of this type are yardsticks for supervision to use to measure their efficiency. Standards can be set up and trends in the cost of maintenance quickly recognized.

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PM PLAN

The Owner-Operator's Responsibility . . .

1. In Underwriting Maintenance—

A maintenance program to be effective must receive the full cooperation of the fleet owner or operator. He must be convinced that an orderly system of tune up, checking and vehicle overhaul will accomplish the objectives set up earlier. Thus, vehicles must be made available to the shop at the times scheduled for maintenance and overhaul. In this respect it may be necessary to provide extra vehicles—or adjust schedules to maintenance requirements.

2. In providing for Shops, Tools, Equipment, etc.—

Tools and equipment as outlined previously should be at the hands of the men who are responsible for PM. Such equipment should be replaced at periodic intervals. Studies should be made to determine the need for power equipment, specialized tools and precision testing instruments; as it goes without saying that up-to-date and well-engineered machines will pay for themselves in short order when volume work is scheduled. The best equipment is the cheapest in the long run, and any device that can save man-hours or contribute to improved vehicle performance should be available.

Adequate shop facilities from the standpoints of space, lighting, ventilation, heat, etc., also are good guarantees of better work on the part of the shop men. Clean shops, painted areas, proper facilities for storage of tools and equipment will go a long way toward improving the desire to do better work.

3. In Promoting Training Programs—

It is the owner's duty to provide for a progressive and continuous program of mechanic as well as driver training in underwriting any PM system. This may take the form of:

1. Sending picked men to various technical training schools.
 2. Sending supervisory personnel to organizations and national meetings that contribute to improved technical knowledge.
 3. Setting up a retraining course either during working hours and slack periods or during evenings.
 4. Using trained men to teach apprentices in the actual work.
 5. Providing all available information in the form of training charts, data, cut away models, procedure information, etc.
 6. Using facilities of truck dealers, factories, branches in the form of service notes, literature or technical assistance.
- Along with this, incentive programs should be considered, in which individual progress and extra effort is recognized and rewarded. This may take the form of dinner parties, awards, prizes, bulletin boards mention or letters of commendation. Any effort made to improve morale can be expected to improve efficiency and in the long run save money for the fleet.

1. In underwriting maintenance
2. In providing shops, tools, etc.
3. In promoting training
4. In vehicle selection
5. In controlling schedules

4. In Vehicle Selection—

Any maintenance program is tied in with the work the vehicle is expected to do, and if they are abused, it can be expected that maintenance costs will rise. Thus, it is necessary that the vehicle be fitted to the job. Purchasing practices should consider loads, speeds, schedules, roads, traffic conditions, engineering features that will save maintenance time and scores of problems that have been covered in previous articles. Suffice it to say here that the problem of vehicle choice involves drivers, mechanics, dispatchers, as well as the consideration of customer, in the interest of low maintenance and operating costs.

The same could be said of supplies and parts purchased for replacement. The cheapest oil or gasoline may be the most expensive, when bearing life, valve life, ring life is concerned. A continuous study of these problems with the aid of men rich in experience as well as manufacturer's sales engineers should be standard operating procedure.

5. In Controlling Schedules—

It is the owner-operator's responsibility in the interest of improving maintenance to set up schedules that do not require excessive speeds. Schedules should be set within the most economic speed range of the vehicles to be used according to existing road conditions. When drivers are forced to excessive speeds to make up for road blocks, bad stretches of road and weather conditions, all costs will be reflected in the resultant abuse of the vehicles concerned. Not only are maintenance costs increased by speeds in excess of the vehicle design, but insurance costs will also increase. Insurance costs are based on accident frequency within a fleet, and it is generally agreed that excessive speeds increase accident rates. Therefore it seems that schedule control is one of the most important factors of management since it is so closely related to profits and the safety of operating personnel.

Driver training plays a major role in maintenance programs—for the careless untrained driver tends to wear out equipment faster than the alert trained operator. Careless use of brakes, clutch, accelerator, choke, play havoc with the vehicle life span, while abuse of tires, power train, suspension system through reckless driving techniques soon take a heavy toll of such parts. Thus, driver selection, training, supervision and re-training are of prime importance in any maintenance program. And these factors all come under the final responsibility of the man who pays the bills.

Basic Fleet Maintenance—An Outline of Recommended Practices

A Suggested Check List for Maintenance Control

The following is an itemized schedule as compiled by S.A.E. for use as a guide in setting up a preventive maintenance and inspection schedule. The schedule provides a flexible basis for any operator of motor vehicles to set up a periodic preventive maintenance program based on a study of past experience.

No intervals between inspections or items to be inspected at any schedule periods have been suggested. Each operator should analyze his own operation and on past experience as a basis, set up a preventive maintenance program to fit the operation. The frequency and type of inspections should be predicated on a schedule of balanced work.

	1	2	3		1	2	3		1	2	3
AXLE, FRONT				COOLING SYSTEM				128. Pistons			
1. Alignment				63. Coolant level, circulation				129. Piston pins			
2. Ball joints				64. Fan belt condition, tension				130. Piston rings			
3. Beam and ends				65. Fan, mounting, bearings				131. Push rods and tappets			
4. Drag link				66. Hose, radiator, top and bottom				132. Rocker arms			
5. Lubrication				67. Internal, external leakage				133. Timing gears, chain			
				68. Radiator, fins, tank, mounting				134. Valves, condition, timing			
AXLE, REAR				69. Seals				135. Valve guides			
6. Axle shaft condition				70. Scale formation, rust, oil				136. Valve lifters			
7. Differential housing				71. Shutters and controls				137. Valve springs			
8. Differential gears				72. Temperature gage				138. Valve seats			
9. Differential bearings				73. Thermostat, type, condition				139. Valve cover gasket			
10. Housing tube and spider assembly				74. Water pump, gasket, bearings, lubrication				140. Valve tappet clearance			
11. Lubricant level				75. Water jacket, condition				141. Vacuum reading			
12. Pinion gear, shaft, bearing, adjustment								142. Ventilation, crankcase			
13. Oil seals								143. Vibration damper			
14. Radius rods											
BODY AND CAB				ELECTRICAL SYSTEM				IGNITION			
15. Bumpers				76. Ammeter, charge rate				144. Coil			
16. Doors				77. Battery, specific gravity				145. Condenser			
17. Frame				78. Battery, cell voltage				146. Contact points, condition, setting			
18. Fenders				79. Battery, water level				147. Centrifugal advance			
19. Handles and hinges				80. Cables, terminals, clamps				148. Distributor cap, contact			
20. Instruments				81. Fuses				149. Distributor shaft bearings—lubricate			
21. License plate mounting				82. Generator, drive, mountings				150. Rotor			
22. Mirrors				83. Generator, armature, brushes, bearings				151. Spark plugs			
23. Mounting bolts				84. Horn, wire and button				152. Spark timing			
24. Side panels				85. Lights, head, tail, stop, clearance				153. Vacuum advance			
25. Seats				86. Regulator settings				154. Wiring			
26. Paint condition				87. Switches							
27. Rub rails				88. Stop light switch				POWER TRAIN			
28. Windows, glass, regulators				89. Starter, mounting, drive, gear, brushes, bearings, voltage draw				155. Transmission countershaft			
29. Windshield wiper, motor blades				90. Turn signals				156. Transmission bearings			
				91. Voltage drop				157. Transmission gears			
BRAKE SYSTEM				92. Wiring, condition				158. Transmission filter			
30. Air governor								159. Transmission controls			
31. Air pressure build up				FUEL SYSTEM				160. Shifter rails and yokes			
32. Air gage				93. Air cleaner				161. Oil leakage			
33. Blocks or linings				94. Air-fuel ratio				162. Oil level			
34. Brake chambers				95. Accelerator linkage				163. Drive shaft condition			
35. Compressor drive, mounting				96. Carburetor jets				164. Splines and yokes			
36. Couplings				97. Carburetor mounting				165. Hanger bearings and mounting			
37. Drums, condition				98. Choke system, linkage, setting				166. Universal joints, lubrication, wear			
38. Hydrovac, operation, lubrication				99. Exhaust manifold gaskets							
39. Hydraulic lines				100. Fuel gage				STEERING			
40. Hydraulic fluid, level, condition				101. Fuel tank				167. Steering arm			
41. Hand brake controls, lining				102. Fuel pump strainer, sediment bowl				168. Steering gear box, adjustment			
42. Master cylinder				103. Fuel pump capacity, pressure, mounting				169. Steering gear, lubricant level			
43. Pedal and linkage				104. Filters, gasoline							
44. Reserve pedal				105. Governor setting				SUSPENSION SYSTEM			
45. Slack adjusters				106. Injectors				170. Frame and cross members			
46. Push rod travel				107. Intake manifold gaskets				171. Spring hangers			
47. Safety valve				108. Lines and fittings				172. Spring shackles			
48. Shoes, springs, rollers, pins, cams				109. Muffler condition, hangers				173. Spring leaves, condition, alignment			
49. Shut off cocks				110. Tail pipe condition, hangers				174. Spring clips and pads			
50. Tanks								175. Shock absorbers			
51. Vacuum booster				ENGINE				176. Torque rods			
52. Compressor drive, mounting				111. Block condition				177. U-bolts and center bolts			
53. Lines and fittings				112. Cylinder head gasket							
54. Wheel cylinders				113. Cylinder wall condition				TIRES			
				114. Crankshaft				178. Cuts and bruises			
CLUTCH				115. Connecting rods				179. Dual matching			
55. Adjustment				116. Camshaft and bearings				180. Dual spacing			
56. Clutch disc and facing				117. Engine mountings				181. Tread wear			
57. Clutch springs				118. Flywheel ring gear				182. Inflation			
58. Pressure plate				119. Main bearings							
59. Pedal and linkage				120. Oil condition				WHEELS AND RIMS			
60. Pilot bearing				121. Oil change				183. Balance			
61. Throwout bearing				122. Oil filter, and element				184. Bearings and seals			
62. Toe board clearance				123. Oil level				185. Bearing lubricant			
				124. Oil pressure				186. Runout			
				125. Oil pan gasket				187. Rim condition			
				126. Oil pump, gears, screen drive				188. Studs			
				127. Oil leakage							

WEAR LIMIT Charts and Data

Covering operating tolerances and adjustments as recommended by manufacturers for pistons, rings, sleeves, cylinders, bearings, valves, clutches, axles and brakes



PISTONS, RINGS, PINS

Piston Ring Size

The correct ring size is determined by the smallest cylinder measurement, which will be found by miking below the ring travel. Consult following table to see if ring gaps must be filed to fit odd cylinder sizes.

Smallest Cylinder Measurement	Correct Ring Size	End Clearance Fitting
std. to .010	standard	None
.011 to .019	.020 oversize	File fit
.020 to .024	.020 oversize	None
.025 to .029	.030 oversize	File fit
.030 to .034	.030 oversize	None
.035 to .039	.040 oversize	File fit
.040 to .049	.040 oversize	None
.050 to .059	.060 oversize	File fit
.060 to .069	.060 oversize	None
.070 to .079	.080 oversize	File fit
.080 to .089	.080 oversize	None
.090 to .099	.100 oversize	File fit
.100 to .109	.100 oversize	None

Piston Ring Side Clearance

ALUMINUM PISTONS

.0015—.003	Top Groove
.001—.0025	Lower Grooves

CAST IRON PISTONS

.002—.0035	Top Groove
.0015—.003	Lower Grooves

Torsional twist type compression rings should have an additional .0005 side clearance over the above figures.

Ring grooves worn to excessive side clearance should be reconditioned and groove spacers installed. Check pistons for worn grooves and, if more than .005 side clearance exists, recut grooves to the next ring width and use a .030 wide groove spacer.

NOTE: One manufacturer supplies .024 wide groove spacers. If these are to be used, recut grooves only .025 over the original size. Sealed Power supplies the GI-60 contracting groove insert which anchors itself to the top of the ring groove and is locked there by its own outward tension—for combatting top ring groove wear.

The following companies have cooperated with CCJ in supplying up-to-date wear limit data for this section: Aluminum Company of America; Eaton Mfg. Co.; Federal Mogul Corp.; Hastings Mfg. Co.; Koppers Co., Inc.; Lipe Rollway Corp.; McQuay-Norris Mfg. Co.; Monmouth Products Div. Cleveland Graphite Bronze Co.; Moog Industries, Inc.; Ohio Piston Co.; Perfect Circle Co.; Ramsey Corp.; Sealed Power Corp.; Spicer Mfg. Co.; Thermoid Co.; Thompson Products, Inc.; Toledo Steel Products Co.; United Engine & Machine Works; U. S. Asbestos Div. Raybestos-Manhattan, Inc.; Wel-Ever Piston Ring Co.; Wilkening Mfg. Co.

Piston Ring End Clearance

Diameter of Cylinder	Minimum End Clearance	Maximum End Clearance
0—1 15/32	.005	.015
1½—2 15/32	.010	.020
2½—3 15/32	.015	.025
3½—4 31/32	.020	.030
5—6 15/32	.025	.035

These tolerances are held in the standard cylinder diameters and if there is any cylinder wear, the maximum permissible gap will increase proportionately.

Piston ring end clearance should always be measured at the smallest part of the cylinder bore, usually at the bottom of the cylinder below the ring travel. If ring end clearance is in excess of the maximum, a ring .010 in. larger in diameter should be used and the end clearance adjusted.

Cylinder Wear

Type Set	Maximum Taper	Maximum Out of Roundness
Plain	.003	.001
Expander (cast iron)	.006	.002
Expander (steel oil)	.015	.004

Where the cylinder taper does not exceed .003 in., the so-called rering job will generally give satisfactory results with conventional compression and oil rings.

Where the cylinder taper is in excess of .003 in.—and if it does not exceed .015 in.—and it is impractical to recondition the engine, a rering job will generally give satisfactory results with spring type rings.

(Expander sets in cast iron for rebore jobs and steel for rering jobs can be used in up to .012 cylinder taper.)

Any cylinder with over .015 in. taper and .004 in. out of roundness should be rebored even though the rings are designed to operate in much greater tapers. Maximum out-of-roundness permissible is .005 in. If the cylinder has holes or pockets or waves which are more than .001 in. deep, or a ridge at the bottom of the ring travel area, the cylinder should be rebored.

Cylinder Finish

Recommended cylinder finish in all rebore, rering and resleeve installations is 15 to 30 microinches RMS, with a cross hatch pattern of scratches. In rebore and resleeve installations the use of a 200-250 grit hone stone is recommended. Hone must be allowed to cut-self free with no pressure upon removal. In a rering installation the recommended finish can be obtained by using a

deglazer with 3/0 emery cloth or by using a flexible hone with stones no finer than 220 grit.

Piston to Cylinder Fit

If the piston skirt diameter is such that the clearance between it and the smallest diameter of the cylinder is 1½ times as much as the clearance recommended by the manufacturer, the pistons should be resized. Pistons should always be resized before piston pin holes are reamed for replacement pins.

Piston Clearance

CAM "A"—Chevrolet Six cast iron pistons must be cam ground with cam "A." Any cast iron piston in the automotive range can be cam ground with cam "A" at the option of the user. Use the following clearances when finishing either round or with cam "A":

Cyl. diam.	3	3¼	3½	3¾	4
All lands	.012	.013	.014	.015	.016
Skirt	.003	.00325	.0035	.004	.0045
Cyl. diam.	4¼	4½	4¾	5	
All lands	.017	.018	.019	.021	
Skirt	.00475	.00525	.00575	.00625	

Note: On new members where specific grinding information is not given on this chart, select a piston of similar type and diameter and give the new piston the same clearance.

After cam grinding pistons check the diameters at X and Y as shown above to be sure the pistons have the proper reduction in diameter at these points.

Piston Pin Clearance

Finish the diameter slightly taper on all pistons with the open end .0005 to .001 in. large. Make certain that the piston is properly positioned into the cylinder bore with respect to combustion chamber requirements.

(Passenger Car)

Pin fits naturally depend upon the accuracy and percentage of bearing surface in the pin hole. The more accurately a pin hole is finished, the looser the pin will feel with the same clearance.

When rod bushings are finished on up to date equipment, a slight clearance for an oil film should be allowed. A properly fit pin will almost drop through the rod bushing of its own weight when tried dry, but will have a drag when oiled.

CAM "B"—Ford "A" and "V8" pistons, and all pistons of the all-aluminum type having a split skirt completely open from top to bottom, use cam "B". Use the following clearances when grinding round. Skirt clearance should be cut in half when using cam "B":

Cyl. diam.	3	3¼	3½	3¾	4
All lands	.020	.021	.023	.025	.027
Skirt	.00225	.0025	.00275	.00325	.0035
Cyl. diam.	4¼	4½	4¾	5	
All lands	.030	.033	.036	.039	
Skirt	.00375	.004	.00425	.0045	

(TURN TO NEXT PAGE, PLEASE)

Wear Limit Charts and Data

Continued from Page 75

CAM "C"—Must be used on all T-slot or U-slot flexible skirt all-aluminum pistons, having a solid section at bottom of skirt, from 2 3/4 to 3 7/16 in. diameter.

CAM "D"—Must be used on all T-slot or U-slot flexible skirt all-aluminum pistons, having a solid section at bottom of skirt, from 3 3/4 to 4 15/16 in. diameter.

Use the following clearances with both cam "C" and "D":

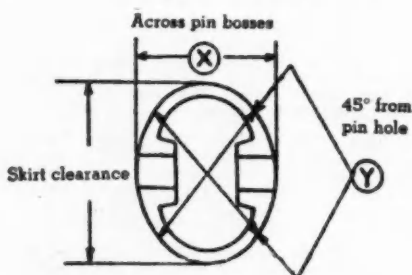
Cyl. diam.	3 3/4	3 7/8	3 9/8	4
All lands	.021	.023	.025	.027
Skirt	.00175	.002	.00225	.0025

Cyl. diam.	4 3/4	4 7/8	4 9/8
All lands	.030	.033	.036
Skirt	.00275	.003	.00325

CAM "E"—Must be used on Nelson Auto-thermic pistons. Same shape as cam "B" but with .013 in. drop at pin which is necessary because of the solid skirt. Also use "E" on all U-slot pistons.

Cam Grinding

Cam	Diameter Reduced at X	Diameter Reduced at Y
A	.004 to .006	.0005 to .0015
B	.005 to .007	.0025 to .0035
C	.008 to .010	.0075 to .0085
D	.011 to .013	.0095 to .0105
E	.012 to .014	.006 to .007



Cam Finishing

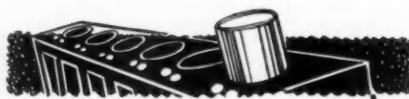
This method of piston finishing produces longer piston and ring life and most quiet piston operation. The various piston types require different cams for finishing as illustrated. These cams, together with the piston grinding machine, produce the correct piston contour and correct clearance at the piston pin bosses. Clearance on the piston thrust faces is controlled by the operator.

The data indicates the recommended clearance per inch of piston diameter. This data is supplied for both cam grinding and where the skirt is ground round. In either case the ring grooves are ground round and the clearance per inch of diameter is indicated in the clearance chart. "Lo-Ex" alloy has a lower coefficient of expansion than other aluminum alloys, and consequently, in using these figures for other aluminum pistons, 20 per cent more clearance should be provided.

Clearance Chart

(ALLOY AND CAST IRON PISTONS)

1. Skirt clearances are indicated as minimum clearances.
2. Pistons should be measured with pin removed. Heat piston before removing pin and allow sufficient time for piston to return to room temperature.
3. All pistons should be ground to a sharp edge at the open end of the skirt.
4. Pistons to be tin-plated should be ground to regular clearances and then plated with tin .0005 thick on pistons smaller than 4 in. diameter and .001 thick on pistons larger than 4 in. diameter.
5. Pistons should be installed so that the FRONT stamped on the head points to the front of the engine.
6. Break corners of all ring grooves .005 to .010 x 45 deg. with a file when finishing a piston.
7. Chamfer top of skirt 1/32 v 45 deg. when finishing a piston.



SLEEVES

Dry Sleeve Fitting—
Sealed Power Corp.

DRY TYPE WITHOUT FLANGE

Sleeve must have press fit in block of .0005 (1/2 thousandth) per inch of bore dia.; thus a 3 in. O.D. sleeve will have .0015 press, a 4 in. O.D. sleeve will have .002 press, etc.

Before boring block find actual O.D. of sleeve in this manner: (a) Mike the sleeve O.D. in three places 120 deg. apart at top and bottom. (b) Add all 6 readings together

and divide by 6. This will give you the actual O.D. from which to figure boring size in block. It is best to do this after cutting sleeve to proper length. Always cut off the end opposite the inside chamfer.

Locate boring bar centrally by "cata paws" or other means given in instructions with your bar.

Do not attempt boring to size with one cut. Follow instructions given with bar you are operating. In any case the final cut should not exceed .040 on diameter in order to end up with a hole which is straight, round and to predetermined size.

Round off bottom outside corner of sleeve and upper corner of block with a fine file. This is necessary to prevent galling during installation.

If entire block is to be sleeved, do not bore or sleeve each cylinder in succession as strains may be set up which will distort the block. Start with No. 1 and do all odd numbers, then come back to No. 2 and complete even numbers.

DRY TYPE WITH FLANGE

After removing old sleeve, hone out block from .001-.0015 (one to one and one-half thousandths) larger than actual sleeve O.D. After honing, clean out bore and try sleeve fit. You should be able to insert up to 1/2 of sleeve by hand push. Clean all scale or dirt from counterbore in block. Turn sleeve upside down and set in counterbore to make sure the flange fits properly.

Round off lower outside corner of sleeve and top of block bore with a fine file. Apply coat of metallic seal to sleeve O.D. Line up any cut-outs on sleeve and push quickly into place. Tap sleeve lightly with rawhide or plastic hammer to make sure it is all the way down.

In event the block is not sleeved originally, bore block. Find the actual size of flange O.D. and counterbore block .005 (five thousandths) larger. The depth must be the same as the width of flange.

After installation—check bore size and finish if required. Wipe off all surplus sealing compound from inside of block.

FINISHING

Bore semi-finished sleeves to within .001-.002 (one to two thousandths) of finish size desired.

Rough hone to within .0005-.001 (one-half to one thousandth) of finish size. Use a fast and steady up-and-down movement of hone so as to produce stone marks with a well defined diamond shaped pattern. Expand stones gradually—don't use excessive pressure as you are apt to rupture the granular structure of the surface metal. When stones "squeal" the pressure is too great, the stones are loaded or both. Dress off face of stones with another stone or a very fine file. It also helps to relieve the trailing edge of the stones similar to the back clearance of a lathe tool.

Change stones and finish hone to final size. If your hone is one designed to be operated dry, follow instructions given by manufacturer.

Roughing stones suggested for wet honing.
(a) Unhardened sleeves & blocks: C150 JV or KV; C180 JV or KV
(b) Hardened sleeves: C100 JV or KV; C120 JV or KV

Finishing stones suggested for wet honing.
(a) Unhardened sleeves & blocks: C320 IV or JV; C400 IV or JV
(b) Hardened sleeves: C180 HV or IV; C220 HV or IV

Letter "C" means silicon carbide, numbers 80, 100, etc., size of grit; letters J, K, etc., the hardness; V means Vitrified bond.

Honing lubricants—lard, lard oil, kerosene and vegetable shortenings are satisfactory. Some oil companies now have a "honing compound" which is made especially for this purpose and should be used where available. After finish honing, check piston in bore with feeler to be sure you have recommended clearance.

Wrap a piece of Wet-or-Dry paper (320-400 grit) around stone, dip in light oil and run up and down the bore 15 to 20 times with hone expanded to touch gently while rotating. This will pick up the greater portions of abrasive particles and metal fragments. Crocus cloth will also be satisfactory. Use stiff bristle brush and scrub bore vigorously with heavy solution of ordinary soap suds. Rinse off with clear water. Apply generous coat of heavy motor oil to bore and wipe out well with soft paper toweling or paper handkerchief.

Thrust Face and Ring Land Clearance

PISTON TYPE	FOR CAM GRINDING		RING LANDS			
	Cam No.	Thrust Face Clearance Per Inch of Piston Diameter at Skirt Open End	For Pistons Ground Round Clearance Per Inch of Piston Diameter	Top Land	Second Land	3rd & 4th Lands
Cast Iron for Passenger Cars	A	.0004 to .0006	.0007 to .001	.005	.003	.002
Cast Iron for Trucks-Tractors	A	.00045 to .00065	.00075 to .0015	.006	.004	.003
Trunk Type Solid Skirt, Aluminum	C	.001 to .0015	.002 to .0025	.007	.005	.004
Lo-Ex up to 3 3/4 diam.	D	.0015 to .002	.003 to .0035	.007	.005	.004
Trunk Type Solid Skirt, Aluminum	B	.0003 to .0005	.0006 to .00075	.007	.005	.005
Lo-Ex 3 3/4 diam. to 6"	B	.0003 to .0005	.001 to .00175	.007	.006	.005
Lo-Ex Split Skirt	C	.0003 to .0005	Must be cam ground	.007	.005	.005
Lo-Ex Split Skirt Heavy Duty	D	.0004 to .0007	Must be cam ground	.007	.005	.005
Lo-Ex T & U Slot to 3 3/4 diam.	B	.0003 to .0005	.0006 to .00075	.007	.006	.005
Lo-Ex T & U Slot 3 3/4 diameter to 5" diameter	B	.0003 to .0005	.0006 to .00075	.007	.006	.005
Nelson Patent Single Control Narrow Strut Lo-Ex	D	.0005 to .0007	.0006 to .00075	.007	.006	.005
Nelson Patent Broad Strut Lo-Ex	B	.0003 to .0005	.0006 to .00075	.007	.006	.005
Nelson Patent Double Strut Lo-Ex	D	.0005 to .0007	.0006 to .00075	.007	.006	.005

Dry Sleeve Fitting— White Machine Works

After cylinder head, oil pan and connecting rod assembly have been removed, the old sleeve may be pulled or pressed out of its receptacle in the block by using a sleeve puller or shop press. Be careful that no scratching or scuffing occurs in the block, that would affect the fitting and roundness of the new sleeve after it is installed. All dirt, rust, and carbon deposit in the receptacle must be removed.

Next comes the important point of accurately measuring the receptacle to determine if it is standard or oversized, and to what extent it is damaged by warpage, distortion, and previous servicing methods. First adjust to proper torque all block studs and cap screws, also all stud nuts except for cylinder head. Check carefully with accurate gage the actual size and condition of the sleeve receptacle. The best job can be done with multiple point gages, because it is physically impossible to accurately measure an out-of-round cylinder with a two point instrument. If the receptacle is as much as .0025 in. (2½ thousandths) oversized or out-of-round, it should be bored to an exact oversize for which sleeves are available and oversized outside diameter sleeves installed with proper "press" or "shrink" fit.

With all dry type sleeves, it is imperative for best performance that all possible outside surface of the sleeve contact or bear directly on the block in order to gain proper support and maximum efficiency in dissipation of heat. The amount or measurement of "press" or "shrink" fit varies according to models, from .001 in. (one thousandth) on some extremely thin walled sleeves with 1/16 in. thickness to as much as .005 in. (five thousandths) on heavier types. About .003 in. (three thousandths) is average. "Shrink" fitting is most desirable on thin walled sleeves. Use dry ice, refrigeration, or CO₂ fire extinguisher until sleeve is frosted, and then drop in receptacle with pliers or gloved hand.

"Press" fitting may be done with shop press, air hammer, or block of wood; also by reversing action with sleeve puller. Where sleeve receptacles are .001 in. or .002 in. oversize, and in otherwise good condition, it is advisable to coat the outside of the sleeve with one of the commercial products now available to insure improved sleeve contact with its receptacle. Such "fillers" are not necessary if sleeve and hole size are correct.



MAIN AND CONNECTING RODS

Bearing Tolerances

CRANKSHAFT—A shaft worn to the extent that the bearing surfaces are ridged and scored is unfit for use and must be reground.

JOURNALS: Should not be more than .003 in. (a) out-of-round.

CRANKPINS: Should not be more than .002 in. out-of-round. If main journals or crankpins exceed these tolerances, the shaft is unfit for further use and must be reground.

CRANKCASE—Bearing Saddle Bore: Must be round within .002 in. (b) and in true alignment lengthwise for use with precision insert main bearings. Maximum out-of-round journals should not be used with maximum out-of-round case bores.

MAIN BEARINGS—Spread (width across the open ends) should exceed the crankcase bore diameter by .005 in. to .020 in., depending on the thickness and structural stiffness of the bearing.

CONNECTING RODS—Crankpin bearing bore and the piston pin bushing bore must be parallel with each other within .001 in. in 6 in., and the twist between these bores must not exceed .001 in. in 6 in.

ROD BORE: Must be round within .002 in. (c) Maximum out-of-round rods should not be used with maximum out-of-round crankpins.

ROD BEARINGS: Spread (width across the open ends) should exceed the rod bore diameter by .005 in. (d) to .020 in., depending on the thickness and structural stiffness of the bearings. The Ford earlier V8 floating rod bearings are exceptions to this rule.

CAMSHAFT BEARINGS—After an engine has used up two sets of main and connecting rod bearings, the camshaft bearings are a potential source of trouble due to wear and should be checked for possible replacement.

The above represents salvage limitations. Longer life can be expected if the conditions are better.

Crankshaft End Clearance

FOR THE RODS, it is sufficient to be sure that the fillet at the ends of the crank pin does not bind on the end of the crank pin bearing. A clearance of .004 in. to .010 in. is recommended.

FOR THE CRANKSHAFT, end play or clearance is recommended as follows:

Crankshaft Journal Diameter	Crankshaft End Clearance
2 to 2½	.004 to .006
2 13/16 to 3½	.006 to .008
3½ plus	.008 to .010

Bearing Oil Clearances

The general rule for the size of the oil clearance, for pressure lubricated bearings, is to allow .001 for each inch of journal diameter, subject to modification depending upon the bearing metal alloy used, i.e.:

TYPE OF BEARING	SHAFT DIAMETERS 2" to 2½" 2 13/16" to 3½"
Lead and Tin	.0015-.0025 .0025-.0035
Base Babbitts	.0015-.0025 .0025-.0035
Cadmium	.002-.003 .002-.004
Copper Lead	.0025-.0035 .0035-.0045

Maximum allowances given by Cleveland Graphite Bronze are lower, as noted:

- Journals—.002 in.
- Bearing Saddle Bore—.001 in.
- Con Rods Bore—.001 in.
- Rod Bearings—.020 in.

General Recommendations

In selecting replacement bearings, it is advisable that the manufacturer's original equipment specifications be followed as to bearing materials and running clearances. It is absolutely necessary that the crankshaft journal and crankpin sizes be accurately established so that the replacement bearing can be supplied which will have the correct oil clearance. To do this job, micrometers and bore gages should be used whenever possible.

After a crankshaft is reground, the ground surfaces must be lapped and polished to obtain a satisfactory smooth finish, i.e., 20 RMS maximum. A ground finish only is considered top rough and will result in a high rate of both shaft and bearing wear. After grinding and polishing, the crankshaft must be washed and all internal oilways thoroughly cleaned. Fillet radii should be checked to insure non-interference with the ends of the bearings.

The bolt torque specifications, as furnished by the original equipment builders, should be strictly adhered to. Proper torquing of the studs or nuts is a very important and essential factor. The best assembly is obtained if the proper torque is applied with a torque wrench alternating from one side of the bearing cap to the other so that the caps are drawn down evenly.

In case crankcases are rebored, the following important items should be checked:

- Bore finish not to exceed 80 RMS.
- Size, taper, and out-of-roundness.
- Reboring with proper torque applied to nuts.
- Bore alignment check with alignment bar.

After it is determined that all parts and clearances are satisfactory, the final assembly may be completed, with the close observation of the following items:

- Freedom of dirt, nicks, scratches and burrs.
- Correct positioning of bearing tangs or locking lugs.
- Correct arrangement of case and rod caps.
- Bearing oil hole alignment with crankcase oil hole.
- A clean engine, thoroughly cleaned oilways, crankcase and other parts.
- Break-in light oil with engine break-in practice ordinarily used for cylinders, pistons and valves.



VALVES

Valve Seat Runout

Both the seat in the block or head, as well as the face of the valve itself should be checked by means of a dial indicator for runout. The valve seat should be concentric with the guide to within .0015 to .0025 total indicator reading.

The valve face should be concentric with the stem to within .0025 to .003. (Actually valve and valve seat runout should be as low as possible, and should not exceed .002.)

It is advisable to periodically check dial pilots as a bent pilot will result in a false reading. Worn or bell-mouthed guides may also cause false readings; replace them if worn beyond limits shown in Valve Stem Wear and Guide Clearance section.

Rotating Valves

There are three types of rotating valves in current use: the positive type rotator, the Ford type rotator, the release type rotator. The positive type and Ford type of rotators do not require adjustment.

The release type, however, requires periodical checking and adjustment since its operation is dependent upon the clearance between the tip cup and valve tip. This clearance must be maintained. If the clearance is greater than the specified high limit, the tip cup should be ground. If clearance is less than specified, the valve tip should be ground. Special gages for checking tip to tip cup clearance are required.

With valve rotation, it is possible to use a wide seat and thus obtain the added cooling effects of a greater seating area. With valve rotation an interference angle between seat and valve face is not required. The interference angle should, however, be used where recommended by the original equipment manufacturer or where failure had resulted due to seat distortion.

The valve face should be concentric with the stem to within .0025 to .003. Bent pilots and worn guides will give false readings. Replace guides not up to these standards.

Valve Seat Widths

Valve seat widths will vary according to design and dimensions of the valve head, type of engine and conditions of operation. The general rule is a wide seat for a hot running engine and a narrow seat for a cool running engine, for longer valve life.

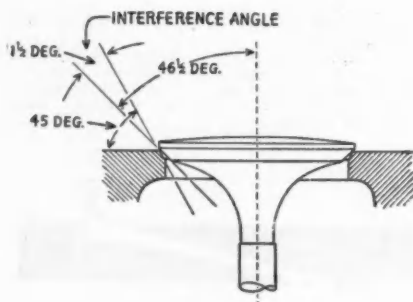
The valve seat width further is governed by the thickness of the valve head margin, or that portion of the valve which extends from the top edge of the valve head to the top edge of the valve face. This sometimes is referred to as the edge thickness and serves a definite purpose of providing a heat dam to protect the valve seat and face from the heat of combustion. A thin margin offers no protection and hastens warpage and burning of the valve face as well as the seat.

(TURN TO NEXT PAGE, PLEASE)

Wear Limits

Continued from Page 77

This margin usually is approximately 3/64 in. wide on most valves and after refacing should be at least 75 per cent of what it was originally. The thinner the margin, the wider the face.



Valve Seat Angle

Valve seat angle should be within 1/2 deg. of that specified by the engine manufacturer. This should not be confused with the interference angle between the valve face and the valve seat specified by some engine manufacturers, i.e., valve face 46 1/2 deg., valve seat 45 deg., interference of 1 1/2 deg. Where valve burning has been encountered, the use of interference angle has sometimes alleviated this condition.

Care should be taken when the valve seats are reconditioned to insure that an even seat is ground.

A valve seat which is wide at one point and narrow at another will cause premature burning of the valve due to unevenness of the heat flow and is an indication that the valve seat is not concentric with the valve guide.

Valve Stem Wear and Guide Clearance

STEM DIAMETER	CLEARANCE	
	Intake	Exhaust
5/16 in.	.002	.003
11/32 in.	.0025	.0035
3/8 in.	.003	.004
7/16 in.	.0035	.0045
1/2 in.	.004	.005

If wear develops to a point where the clearance is 50 per cent greater than the specified maximum, replacement of the worn parts is recommended. (Wear readings should be taken at maximum bell mouth or taper.)

Valve stem warpage, up to .003 maximum indicator reading, is permissible. Wear on stem tip up to 1/32 in. is usually permissible. If clearance is .003 or less, a stem .003 will bind.

Valve stem wear should not exceed .001 under the original diameter. That portion of the valve stem below the valve lock groove is not a wearing surface and consequently can be used to measure the original diameter of the stem.

Valve Stem Length

This is not too critical a dimension on most designs inasmuch as the tappet can be adjusted to compensate for valve stems which have been ground and thereby shortened. In the case of the Ford valve where adjustable tappets are not used, length should be held to .020 of the original length.

Recommended Press Fits

O.D. OF SEAT	DEPTH OF INSERT					
	1/4—3/8	3/8—9/16	9/16—11/16	11/16—1 1/8	1 1/8—1 1/4	1 1/4—1 1/2
1 in.—2 in.	.004	.002	.003			
2 in.—3 in.		.005	.003	.004		
3 in.—4 in.				.006	.004	.005

Valve Tappet To Bore Clearance

This clearance should not exceed engine manufacturers' specifications. Soft spots, excessively worn contact faces, worn, cupped and cracked tappet followers and screws should be replaced. Positive setting of valve tappet clearance is impossible with badly worn tappets.

Valve Stem To Guide Clearance

An old rule to follow is .00035 per .100 valve stem diameter, i.e., a valve stem having a .341 diameter should be fitted with approximately .0012 clearance. This would be the low limit and should not exceed .0025.

Excessive clearance interferes with the heat transfer from the valve stem to the guide and allows varnish and deposits to stew and build up on the valve stem until it is held open and burned.

Exhaust valve guide clearance should be approximately .0005 greater than intake.

Valve Guide Taper

Valve guide tapers falls into the same category as the guide clearance and should not exceed .001 due to taper or uniform wear. Where design specifies a taper for the I.D. of the guide, we would suggest that the above limits of wear be considered as the limiting factor.

The above wear limits and operating tolerances will be satisfactory regardless of the type of alloy used in their composition. Tappet clearance is the only adjustment necessary when an austenitic steel valve is used to replace the original equipment valve of magnetic steel. The coefficient of expansion of the austenitic steel is considerably greater than magnetic steel and additional clearance is necessary. A corrected clearance chart has been issued specifying the correct tappet clearance for Aerotype valves.

Valve Springs

Valve springs are another determining factor in the condition of the valve. Weak springs permit the valves to bounce on the seat and wear and pound in the face.

All valve springs should be tested on a spring tension tester. The compression should be within 10 per cent of the factory limits. If otherwise, replace.

In replacing valve springs, the closed coils should be kept next to the block so that the surge and pounding due to inertia forces can be reduced. This assists in preventing spring breakage.

Also watch for:

1. Wear in block.
2. Wear in spring retainer cam.
3. Wear in spring end.
4. Spring tension.

Lowering of spring tension due to lowering of valve seat on reconditioning.

Installations, where the valves have been lowered on the seat due to grind in the installed spring height, should be checked. Variations in excess of .020 should be taken up with washers to keep spring pressures in the proper range.

When springs are removed, it is good practice to thoroughly clean them and examine the wire surface. Any signs of corrosion would indicate that they should be discarded.

Tappet Clearance

The tappet clearance must not be overlooked. If too much clearance is allowed, the ramp on the cam is not used and the valve train will be subjected to terrific impact forces, causing excessive loads throughout. There will be valve flutter at the cam tip, followed by comparatively smooth action of the dwell side of the cam, with valve bouncing in closing. Maintain original equipment operating conditions.

Valve Seat Inserts

For best performance, the recess for valve seat inserts should be bored smooth square and flat on the bottom.

The sizes should be measured accurately to give the interference fits as shown here.



SERVICE BRAKES

The following working limits for better operation and care of Lockheed, Huck, Bendix and Two-shoe cam operated brakes, are recommended:

Do not cut drum wall on cars, light trucks, heavy trucks and buses more than 20-25 per cent of manufacturer's original thickness. When drums are heavily loaded, caution should be used in cutting down drum thickness due to squeal and distortion problems. Thickness refers to drum body only and does not include flanges or ribs. Drums should be discarded if deflection in diameter is more than .060 in. under full brake application. Diameter should be concentric with hub within .010 in.

SURFACE—Refinish if heat checked or scored more than .010 in. deep.

TAPER—Refinish if barrel shaped or bell-mouthed more than .010 in.

SHIM STOCK or oversize lining should be used to compensate for material removed.

ANCHOR ENDS—Bendix shoes should be repaired or replaced if anchor radius is enlarged or bent.

RIM—Shoes should be repaired or replaced if rim is out of round, out of square or distorted.

WEB—Shoes should be repaired or replaced if rim to web weld is broken as this causes excessive rim flexing resulting in uneven lining wear.

ROLLERS—Discard rollers that are worn, particularly if a flat spot is present on outside. Discard cam follower plates if grooved by the cam more than .015 in.

ANCHOR BUSHINGS should be replaced if worn more than .008 in. Anchors should be fitted and bushings accurately reamed.

PINS: Anchor pin on the Huck brake is non-adjustable type, renew anchor if worn more than .008 in. On the two-shoe cam operated brake and the Lockheed brake, renew anchor pins, or rebush shoes if worn more than .008 in.

ARTICULATING LINKS must be rigid and hold the shoes without side play. Examine buttons and button springs and renew if bent or worn. Applies to Huck brake only.

All weak pull back springs should be replaced.

On the two-shoe cam operated brake, camshaft should be renewed and bracket rebushed if worn more than .025 in.

Repair or replace warped, bent or loose backing plate. Lubricate backing plate ledges.

WHEEL CYLINDERS—Dismantle and examine at each reline or if leaks are present. Renew pistons if scored, sticking or worn more than .005 in. Cylinder walls should be honed if scored. If, after honing enough to remove all scores, the "no-go gauge" will enter, wheel cylinder should be replaced. Renew all rubber cups.

CHECK VALVE—Residual line pressure should be 7 to 12 lbs. per sq. in. Renew check valve if spring is rusty or seats are worn in spring type, or if rubber cup or rubber seat are worn or distorted in metal cage type.

PRIMARY AND SECONDARY CUPS—Replace cups if distorted or edges are rounded.

MAIN SPRING—Replace spring if weak or rusty.

PISTON—Renew if scored or worn more than .005.

Make sure ports and filler cup vents are open.

CYLINDER WALLS should be honed if scored. If, after honing enough to remove all scores, the "no-go gauge" will enter, master cylinder should be replaced.

LINING should be replaced when worn within .010 in. of rivet head on passenger cars and light trucks and within 1/32 in. of bolt head on heavy trucks and buses. In the case of bonded linings, which are rapidly coming into the picture, lining should be replaced when worn to a minimum of .020 in.

CAPACITIES

MODEL	LUBRICANT CAPACITY				Cooling System Capacity, Quarts
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Axle Pints	
C65T	12	14	25	34	
C70, C70T	12	18	25	34	
U70, U70T	12	18	25	38	
C70S, C70TS, C70D, C90T	12	18	18	34	
U70S, U70TS, U90, U90T	12	18	18	38	
C7064	12	18*	22ea	34	
C7064S	12	18	14ea	34	
C8044	12	18†	18	34	
C90	12	18**	18	34	
C90D	12	18**	24	34	
C9064	12	18**	32ea	34	
DC75T	28	14**	18	37	
DC100, DC100T	28	16**	18	40	
DC100D	28	16**	24ea	40	
DC10044N	28	16†	18	40	
DC10064	28	16**	17ea	40	
DC10064S	28	16**	26ea	40	
DC20064SN	28	16**	28ea	40	

*—Torque Divider—20 pints.

†—Transfer Case—4 pints.

**—Auxiliary Transmission—12 pints.

‡—Transfer Case—5 pints.

Truck Data

AUTOCAR



65, 70, 70S, 8044, 90, DC75, DC100 Series

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing pages 112-115

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded	SAE Group No.	AABM Group No.
All Gasoline Models (1945-52)	120*	17	Pos	2	2
All Diesel Models (1945-52)	155**	23	Pos	4	4

*—2 Batteries; **—4 Batteries.

TENSIONS

ENGINE MODELS	Cylinder Head (pounds-foot)	Main Bearings (pounds-foot)	Connecting Rod Bearings (pounds-foot)
447, 501 All Models with Diesels	90-100	140-150	90-100

See CUMMINS—page 112

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens		Intake Valve Closes	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °C B-Before A-After	Spark Occurs °C Flywheel Teeth °C B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap				
C65T	Own 447	6-4 1/4 x 5 1/2	40-2400	16°B		.055	.018	.021	CH	8 Com	18mm	.025	.024	6°B	2°B	105
70 Series	Own 447	6-4 1/4 x 5 1/2	40-2400	16°B		.055	.018	.021	CH	8 Com	18mm	.025	.024	6°B	2°B	105
70S Series 90 Series 8044	Own 501	6-4 1/4 x 5 1/2	40-2400	16°B		.055	.018	.021	CH	8 Com	18mm	.025	.024	6°B	2°B	105
DC75 Series DC100 Series	Cum HRB-600	6-5 1/4 x 6	40-1800	5°		.014	.014	.022					Die sel			825
DC200 Series DC10044	Cum NHB-600	6-5 1/4 x 6	40-2100	20°		.014	.014	.027					Die sel			500

VALVE SPRINGS

ENGINE MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
447 501	132	2 1/2	88	2 1/4
Cum HRB600	136	2 1/2	87	2 1/4
Cum NHB600	109	1 1/2	78	2 1/4

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
C65T	0-1/8	1P	3 1/2 N-1/4 P	5 1/2 P
C50D C70 C70T C70D	0-1/8	1P	3 1/2 N-1/4 P	5 1/2 P
C7064	0-1/8	1P	3 1/2 N-1/4 P	5 1/2 P
C70S C75T	0-1/8	1P	3 1/2 N-1/4 P	5 1/2 P
C70TS	0-1/8	1P	0-1/2 P	5 1/2 P
C90 C90D	0-1/8	1P	1N-1P	8
C7064S	0-1/8	1P	3 1/2 N-1/4 P	5 1/2 P
C90T	0-1/8	1P	3 1/2 N-2 1/4 P	8
C9064	0-1/8	1P	1N-1P	8
U70	0-1/8	1P	3 1/2 N-1/4 P	5 1/2 P
U70T U70TS DC75T	0-1/8	1P	0-1/2 P	5 1/2 P
U70S U90 U90T	0-1/8	1P	1 1/2 N-1/4 P	8
DC100 DC100T DC10044	0-1/8	1P	0-2P	8
DC100D DC10064S DC20064S	0-1/8	1P	1N-1P	8
C8044 DC10044N	0-1/8	0	5P	0

N—Negative.

P—Positive.

LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
All Models (1945-52)	(S)30	(M)20	(W)10	140*	90*	140	90	140	90	140-90

S—Summer.

M—Mild.

W—Winter.

*—Spicer Transmission SAE 50 Engine Oil.

BROCKWAY



Models 88WH, 128W, 146W, 148W, 151W, 152W, 153W, 153BB, 154W, 154WH, 240XW, 260XL, 260XW, 260XWL

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing pages 112-115

CAPACITIES

MODEL	LUBRICANT CAPACITY				
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Axle Pints	Cooling System Capacity, Quarts
88WH (1945-52)	7	7	15	20	25
128W (1947-52)	7	12	20	20	25
146W (1947-52)	7a	12	31	20	25
148W (1949-52)	8a	16	31	20	25
151W (1949-52)	8a	16	34	20	25
152W (1947-52)	8a	16	20	20	25
153W (1949-52)	8a	16	36	20	25
154W (1947-52)	14b	18	20	20	40
154WH (1947-52)	14b	18	20	20	40
240XW, 260XL, 260XWL (1947-52)	14b	18	38c	20	40
260XW, 260XWL (1950-52)	8a	16	52d	20	32

a—When oil filter is drained add 1 extra qt.
b—When oil filter is drained add 4 extra qts.
c—When 2-speed axle—32 pt.
d—2 rear axles.

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded	SAE Group No.	AABM Group No.
88WH, 128W, 146W, 148W, 151W, 152W, 153W, 153BB, 154W	120	17	Pos	2H	4
154WH, 240XW, 260XL	155	23	Pos	4H	4
260XW, 260XWL	120	17	Pos	2H	2

*—2 Batteries.

TENSIONS

MODEL	Cylinder Head (pounds-foot)	Main Bearings (pounds-foot)	Connecting Rod Bearings (pounds-foot)
All Models	See Continental—Page 112		

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens		Intake Valve Timing Cold	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG			Breaker Point Gap	Spark Occurs TC A-After	Spark Occurs Flywheel Teeth B-Before A-After	Compression Pressure at Cranking Speed
				TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap			
88WH (1945-52)	Con 38B	6-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	40-2000	6 $\frac{1}{2}$ "B	2 $\frac{1}{2}$ B	.022	.020H	.022H	CH	7 COM	18mm	.025	.022	6"B	.....
128W, 146W (1947-52)	Con 40B	6-4x4 $\frac{1}{2}$	40-2000	6 $\frac{1}{2}$ "B	2 $\frac{1}{2}$ B	.022	.020H	.022H	CH	7 COM	18mm	.025	.022	6"B	.....
148W, 151W, 152W, 153W, 154W (1944-52)	Con 42BX	6-4 $\frac{1}{2}$ x4 $\frac{1}{2}$	55-2500	16"B	6B	.022	.020H	.022H	CH	7 COM	18mm	.025	.022	6"B	.....
154WH, 240XW, 260XL (1947-52)	Con 46B	6-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	55-2500	17"B	6 $\frac{1}{2}$ B	.024	.020H	.024H	CH	5 COM	18mm	.025	.022	6"B	.....
260XW, 260XWL (1947-52)	Con 48B	6-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	55-2500	17"B	6 $\frac{1}{2}$ B	.024	.020H	.024H	CH	5 COM	18mm	.025	.022	6"B	.....

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
88WH, 128W, 146W (1944-52)	119 \pm 4	1.52	61 \pm 3	1 $\frac{1}{8}$
148W, 151W, 152W, 153W, 154W (1944-52)	144 \pm 7	1.52	69 \pm 3.5	1 $\frac{1}{8}$
154WH, 240XW, 260XW, 260XL, 260XWL (1944-52)	160 \pm 7	1 $\frac{1}{4}$	67 \pm 4	2 $\frac{1}{4}$
	38 \pm 3	1 $\frac{1}{4}$	381 \pm 3	2 $\frac{1}{4}$

O—Outer. I—Inner.

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K.P. SLANT (in degrees)
88WH, 128WH, 260XL, 260XWL	1 $\frac{1}{8}$ - $\frac{1}{2}$	1	1 $\frac{1}{2}$ -1 $\frac{1}{4}$	8
146W, 148W, 154W, 154WH	1 $\frac{1}{8}$ - $\frac{1}{2}$	1	1 $\frac{1}{2}$ -1 $\frac{1}{4}$	8 $\frac{1}{2}$
151W, 152W, 153W, 153BB, 240XW, 260XW	1 $\frac{1}{8}$ - $\frac{1}{2}$	1	1 $\frac{1}{2}$ -1 $\frac{1}{4}$	8

LUBRICATION

MODEL	ENGINE		TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range		Summer	Winter	Summer	Winter	Summer	Winter	
88WH, 128W, 146W, 148W, 151W, 152W, 153W, 153BB, 154W (1944-52)	40 above 32°	30 below 32°	90EP	90EP	90EP	90EP	160	110	140
154WH, 240XW, 260XW, 260XL, 260XWL (1944-52)	30 above 32°	30 below 32°	90EP	90EP	90EP	90EP	160	110	140

EP—Extreme pressure lube.

NT
TY
Rear
Axle
Ratio
15
20
31
34
20
36
20
20
20
38e
52d
32

SAE
Group No.
AABM
Group No.
2H
4H
2H

Connecting Rod
Bearings
(pounds-
feet)
ge 112

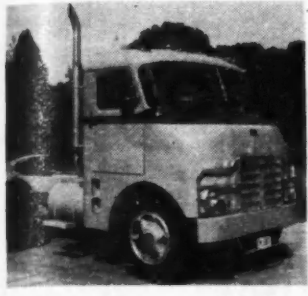
Wheel Teeth °C
B-Before
Comp. Pressure at
Cranking Speed
K.P. SLANT
(in degrees)
0 5/8

(in degrees)
0 5/8

UNI-
VERSAL
JOINT
140
140

il, 1952

BROWN



Truck Data WHITE-FREIGHTLINER

Models
A-64, B-42



Models Gas and Diesel

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 112-115

CAPACITIES

MODEL	LUBRICANT CAPACITY				Cooling System Capacity, Quart
	Engine Quarts	Trans-mission Pints	Rear Axle Pints	Front Axle Pints	
BROWN					
KT & KP (R6572)	16*	24	20	46	
KT & KP (HRBB, NHB)	30*	29	20	52	
KT & KP (BUD)	25	44**	20	65	
LT & LP (R6572)	16*	24	20	46	
LT & LP (NHB, HRBB)	30*	29	20	52	
LT & LP (BUD)	25*	29	20	65	
LS (R6572)	16*	24	22ea	46	
(HRBB), (NHB)	30*	29	22ea	52	
(BUD)	25*	29	22ea	65	
FREIGHTLINER					
WF-64	30	29†	20‡a	58	
WF-42	30	17	20	58	

*—Change.
**—Duplex
†—16 Main and 12 Aux.
‡—2 per Deisel Unit

BATTERY

MODEL	App. Hr. Capacity	Number of Plates	Terminal Grounded
BROWN			
BT1219*	140	17	Pos
FREIGHTLINER			
WF-64, WF-42	152	19	Pos

TENSIONS

MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
BROWN			
R6572T	90-100	120-130	65-75
All Diesel models	430-450	310-330	105-115
FREIGHTLINER			
WF-64, WF-42	430-450	325	125-135

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lib. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake Tappet Clearance for Valve Timing	Exhaust	Make	Type	Size	Gap				
BROWN															
ALL MODELS	Con. R6572... Cum HRBB Cum NHB Bud 6DA779 Bud 6DA844	6-4 1/4 x 5 1/2 6-5 1/4 x 6 6-5 1/4 x 6 6-5 1/4 x 6 6-5 1/4 x 6 1/2	60-1800 40-2000 40-2100 30-45@1800 B20* 30-45@1800 B20*	15°A		.020 .020 .020	.020	AL	BT5	18mm	.030	.030	3°B		110
						.017 .027									525
						.015 .012									525
FREIGHTLINER	WF-64, WF-42 Cum NHB600	6-5 1/4 x 6	35-55° 20° B			.014 .027									525

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
BROWN				
R6572	170	1 3/4	73	2 1/4
HRBB	136	3 3/4	87	3 1/2
NHB	102	3 1/4	72	3 1/2
6DA779	162-172	2 1/4	70-80	2 3/4
6DA844	162-172	2 1/4	70-80	2 3/4
6DA844TKD	162-172	2 1/4	70-80	2 3/4
6DA779TKD	162-172	2 1/4	70-80	2 3/4
6DT5468TKD	162-172	2 1/4	35-38	2 1/4
FREIGHTLINER				
Cum NHB 600	109	1 1/2	70	2 1/4

LUBRICATION

MODEL	ENGINE		TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range		Summer	Winter	Summer	Winter	Summer	Winter	
BROWN									
R6572T	(S)—40 (W)—30	(W)—30	50*	50*	140	90	140	90	90
All Diesel Models	(S)—20 (W)—20	(W)—20	80*	50*	140	90	140	90	90
FREIGHTLINER									
WF-64, WF-42	(S)—30 (W)—30	(W)—30	90	90	90	90	90	90	90

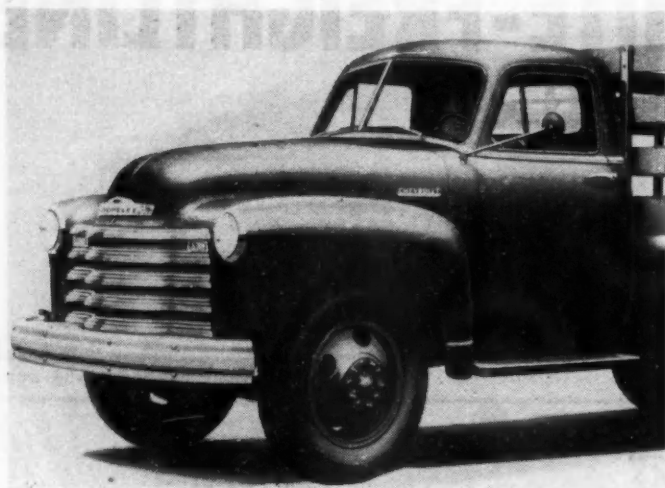
S—Summer. W—Winter. *—Spicer transmissions. With Fuller transmissions: Summer—140; Winter—90.

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
BROWN				
All 50 Models & Up	1/8 ± 1/8	3/4 ± 1/4	2°-3°P	5 1/2°
All TJ & TK Models through 1950	1/8 ± 1/8	3/4 ± 1/4	2°-3°P	5 1/2°
FREIGHTLINER				
WF-64, WF-42	1/4	1	2 1/4	8

P—Positive

CHEVROLET



KP, KR, KS, VJ, VK, VL, KT, KU, VP, VPS, VR, VRS, VS, VSS, VV, VVS, VW, VWS, VY, VYS, VS

CAPACITIES

MODEL	LUBRICANT CAPACITY				
	Engine Quarts	Transmission Pints	Rear Axle Pints	Final Drive Pints	Cooling System Capacity, Quarts
KP	8	11	4	1	15
KR	8	11	4	1	15
KS	8	11	4	1	15
VJ	8	11	4	1	15
VK	8	11	4	1	15
VL	8	11	4	1	15
KT	8	11	4	1	15
KU	8	11	4	1	15
VP, VPS, VR, VRS	8	11	4	1	15
VS, VSS, VV, VVS	8	11	4	1	15
VW, VWS, VY	8	11	4	1	15
VYS, VV	8	11	4	1	15

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded	SAE Group No.	AAIM Group No.
All Trucks Except School Bus	100	15	Neg	1M	1M
School Bus	125	19	Neg	2M	2M

TENSIONS

ENGINE MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
All Models 216 cu. in. Displacement	70-80	100-110*	40-50*
All Models 235 cu. in. Displacement	90-100	100-110*	40-50*

*—With oiled threads.

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Flywheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake Tappet Clearance for Valve Timing	Exhaust	Make	Type	Size	Gap				
All Models with 216.5 cu. in. Engine	Own	6-3 1/2 x 3 3/4	14-2000	1°A	.....	**	.008*	.015*	AC	44-5Com	14mm	.035	.018	5°B	110
All Models with 235 cu. in. Engine	Own	6-3 1/2 x 3 3/4	14-2000	1°A	.....	**	.008*	.015*	AC	44-5Com	14mm	.035	.018	5°B	110

*—Above 8000 lb GVW, except school buses, .010 intake, .020 exhaust.

**—Zero lash No. 1 exhaust.

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
All Models	124-140	1.505	53-63	1.821

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
1/2-Ton	1/8-3/8	1 1/2-2 1/2	1 1/2-2 1/2	7 1/2-8 1/2
3/4-Ton	1/8-3/8	1 1/2-2 1/2	1 1/2-2 1/2	7 1/2-8 1/2
1-Ton Forward Control	1/8-3/8	1 1/2-2 1/2	1 1/2-2 1/2	7 1/2-8 1/2
1-Ton Forward Control	1/8-3/8	1 1/2-2 1/2	1 1/2-2 1/2	7 1/2-8 1/2
1, 1 1/2, 2-Ton Conventional	1/8-3/8	1 1/2-2 1/2	1 1/2-2 1/2	7 1/2-8 1/2
2-Ton Cab-Over-Engine	1/8-3/8	1 1/2-2 1/2	1 1/2-2 1/2	7 1/2-8 1/2

*—1 deg.

LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
All Models	20 above 32°	20W@10° to -32°	10W@10° to -10°	90MP	90MP	90MP	90MP	MP	MP	90

*—10% kerosene or 5W below -10°.

MP—"Multi-Purpose" Gear Lubricant.

CAPACITIES

MODEL	LUBRICANT CAPACITY			Cooling System Capacity, Quarts
	Engine Quarts	Transmission Pints	Rear Axle Pints	
G101	7	12	20	28
G301	8	16	23	30
G302	8	16	31	35
G402	8	16	31	35
G601	18	24	30	47
G602	18	24	30	49
G603	18	24	30	53 1/2
D202	7	12	20	26
D401	15	16	23	35
D402	15	16	31	35
D404	12	24	31	35
D601	13	15	30	40
D801	20	24	30	42
D802, D803, D808	28	24	30	42
G402X46	9	16	31†	35
D404X46, D404YX46	18	26	31†	35
D802T35, D803T35	28	44	38	42
D803V46	28	17	31†	42
D803V60	28	44	32†	42

—Without filter.

—Oil pan.

†—Each axle.

Truck Data

CORBITT

Models G101, G301, G302, G402, G601, G602, G603, D202, D401, D402, D404, D601, D801, D802, D803, D808

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing pages 112-115

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded	AABM Group No.
G101	100*	13	Pos	1
G301	140	19	Pos	4
G601, G602, G603, G302, G402, D202, D401, D402, D601, D801, D802, D803, D808	140*	19	Pos	4
D404	200**	25	Pos	4
D404X46, D404YX46	200*	25	Pos	7D
G402X46	150			

*—2 Batteries.

**—4 Batteries.

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
All 2-Wheel Drive (1947-52)	3/4-1 1/4	1	2-3 1/4	8*
All Front Wheel Drive (1947-52)		0	5 7	

*—All trucks using FD900 and FE900 front axle—5 1/2°.

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Flywheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap				
G101	Con M6330	6-4x4 1/2	40-50-50	6 1/2°B		.022a	.022a	.022ab	AC	84	18mm	.025	.020	6°B		108
G301	Con B6371	6-4 1/2x4 3/4	40-50-50	6 1/2°B		.022	.017	.025b	AC	85	18mm	.025	.020	6°B		123
G302	Con B6427	6-4 1/2x4 3/4	40-50-50	6 1/2°B		.022	.017	.019b	AC	84	18mm	.025	.020	7°B		124
G402	Con T6427	6-4 1/2x4 3/4	40-60-50	16°B		.022	.017	.017	CH	C6	18mm	.025	.020	7°B		115
G601	Con R6513	6-4 1/2x5 1/2	50-60-60	17°B		.0245	.020	.020b	AC	85	18mm	.025	.020	5°B		120
G602	Con R6522	6-4 1/2x5 1/2	50-60-60	17°B		.0245	.020	.020b	AC	85	18mm	.025	.020	5°B		120
G603	Con R6602	6-4 1/2x5 1/2	50-60-60	17°B		.0245	.020	.020b	AC	85	18mm	.025	.020	5°B		120
D202	Her DJXH	6-3 1/2x4 1/2	45-2000	12°B		.010	.010	.010				.025				
D401	Her DWXD	6-4 1/2x4 3/4	50-2600	17 1/2°B		.010	.010	.010								
D402	Her DWXLD	6-4 1/2x5											Diesel			
D404	Cum JBS600	6-4 1/2x5	30-50-2500	41°B		.015	.015	.025					Diesel			
D601	Her DRXC	6-4 1/2x5 1/2	30-1200	12°B		.016	.016	.016b					Diesel			475
D801	Cum HB600	6-4 1/2x6	30-40-1800	5°B		.014	.014	.022b					Diesel			525
D802	Cum HRB600	6-5 1/2x6	30-40-1800	5°B		.014	.014	.022					Diesel			525
D803	Cum NHB600	6-5 1/2x6	30-40-2000	20°B		.009	.009	.027b					Diesel			525
D808	CumHRBB600	6-5 1/2x6	30-40-2000	5°B		.014	.014	.022					Diesel			525

a—With Roto valves, set @ .018.

b—With Stellite valves, increase .003.

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
G101	111-118	1.521	53-59	1 1/8
G301, G302	102-110	1.521	53-59	1 1/8
G402	28-32	1 1/4	11.3-14.3	1 1/8
G601, G602, G603	129	1.450	71	1 1/8
D202	57	1 1/8	12.8	1 1/8
D401, D402	160-170	1.75	67-73	2.25
D404	82-88	1.75	33-37	2.25
D601	55	1.406	31	1.781
D801	37	1.281	19	1.658
D802, D803	73	1 1/4	34	1 1/4
D808	64	1 1/4	25	1 1/4
D404	108-118	2	66-72	2 1/8
D601	48	1.449	27	1.844
D801	30	1.355	17	1.75
D802, D803	129-143	2 1/4	83-91	3 1/4†
D808	129-143	2 1/4	83-91	2 1/8
D803	102	1 1/8	72	3 1/4†

†—Free length.

I—Inner.

O—Outer.

TENSIONS

MODEL	Cylinder Head (pounds-foot)	Main Bearings (pounds-foot)	Connecting Rod Bearings (pounds-foot)
G101, G301, G302, G402, G601, G602, G603	1/4" (18) 20-25 5/8" (16) 35-40 3/4" (20) 70-75	3/4" (20) 85-85 1" (18) 120-130 1 1/8" (18) 135-145	1/4" (18) 140 1/2" (18) 158 3/4" (18) 158
D202	158	77-95**	140
D401, D402	158	175	158
D404	180-210	(1)	40-45
D601	1/2"-175	175	158
D801, D802, D803, D808	1"-280	430-450	310-330

*—Center and Rear.

**—Front and Intermed.

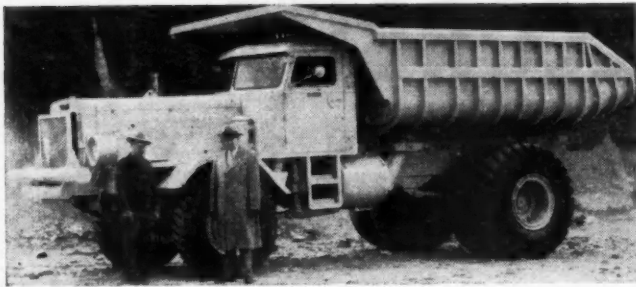
(1)—Advance nuts 60° from snug position.

LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
All Diesels (1947-52)	40 above 90°	30 above 32°	20 below 32°	140	90	140	90	140	140	140
All Gasoline Models (1947-52)	50 above 90°	40 above 32°	30 below 32°	140	90	140	90	140	140	140

All Spicer transmissions—SAE 50 for winter and summer.

DART



Models: 100, 110, 140, 200 Series,
250 Series

LINN



Models: A-15, A-25, A-35, A-45

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 112-115

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded	AABM Group No.
DART—100, 110, 200/3010, 200/456	120	17	Pos	...
140, 250/462, 250/472	168**	17	Pos	...
LINN—All Models	135	19	Pos	4

**—12 Volt Battery.

TENSIONS

ENGINE MODEL	Cylinder Head (pounds-foot)	Main Bearings (pounds-foot)	Connecting Rod Bearings (pounds-foot)
DART			
100, 200/3010, 200/456	129-134	129-134	120-125
110	160-170	155-185	...
140, 250/472	300	280	263
250/462	175	241-250	72-75
LINN			
A-15, A-25, A-35, A-45	52½	Note 1	38½
	75	Note 1	52½

Note 1—Front and Inter.—70; Center and Rear—50½

CAPACITIES

MODEL	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Axle Pints	LUBRICANT CAPACITY
DART—100	10	24	38	42	
110	15	24	39	85	
140	28	44	100	59	
200/3010	10	16	28	42	
200/456	10	32	64	42	
250/462	15	29	52	46	
250/472	28	29	56	59	
LINN					
A-15, A-25, A-35, A-45	8	2½	6*	22	

*—Front axle only.

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After	OPERATING TAPPET CLEARANCE (Hot unless noted)	SPARK PLUG	Breaker Point Gap	Spark Occurs TC B-Before A-After	Spark Occurs Flywheel Teeth B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake Exhaust	Make Type Size Gap			
DART—100, 200/3010, 200/456	Wau 140GK	6-4½x5½	40	5°A	...	.010 .012-.4C .018-20C	CH 8 COM 18mm Z	.018	...	...
110	Det 6094	6-4½x5	30	...	...	.010 .012 .012	DI Di	...	...	...
140, 250/472	Her DFXH	6-5½x6	38	...	...	.010 .010 .016	...	...	...	...
250/462	Wau 145GK	6-5½x6	40	5°A	...	.010 .012-.4C .023-25C	CH 8 COM 18mm Z	.020	...	...
LINN—A-15, A-25	Her JXE3	6-3½x4½	26-1600	5°B	...	.008 .008 .010	AL A5 14mm .025	.018	4°B	...
A-35, A-45	Her JXC	6-3½x4½	26-1600	5°B	...	.008 .008 .010	AL A5 14mm .025	.018	4°B	...

Det—Detroit Diesel (GM).

Z—.025-.030.

C—Cold

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
DART—All Models—See Listing under Engine Manufacturers, pages 112-115	58	1.594	43	1.920
LINN—A-15, A-25, A-35, A-45	...	...	...	...

FRONT END

MODEL	TOE-IN (Inches)	CAMBER (In degrees)	CASTER (In degrees)	K. P. SLANT (In degrees)
DART—All Models	½-¾	1	1	8
LINN—All Models	...	...	...	...

LUBRICATION

MODEL	ENGINE		TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range		Summer	Winter	Summer	Winter	Summer	Winter	
DART—All Models	(S & W) 30	(Extreme Cold) 20	90	140	90	140	90	140	90
LINN—All Models	40 above 90°	30@32°-90°	140	90	140	90	140	90	B

* 10, 10W Below 10°.

S—Summer.

W—Winter.

B—Chassis lube.

CAPACITIES

MODEL	LUBRICANT CAPACITY				Cooling System Capacity, Quarts
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Axle Pints	
222	6	4 1/2	8	19	
322	6	4 1/2	8d	19	
404SC	9	4 1/2	8d	26	
420	9	4 1/2	11d	24	
509C	9	4 1/2	11d	26	
509SC	9	4 1/2	13d	24	
520	9	4 1/2	14d	24	
614C	9	12	20	23	
614SC	9	12	23d	22	
620	9	12	22d	24	
622	7	12	22d	24	
660	10	18	22	36	
720	10	18	20	36	
722	10	18	30	42	
920	18	15	30	47	
921	20	15	22	40	
921R	50	44	30	39	
950	32	44	38	56	
951	20	44	38	76	

a—Capacities shown are for standard transmissions. The following, furnished on certain models, are optional.

WARNER
T9-T9A—4 1/2 pt.
T87—4 1/2 pt.
T98—6 pt.

CLARK
265V-VO—12 pt.
270V-VO—20 pt.
276V—20 pt.
290V-VO—18 pt.
291V—18 pt.
326V-VO—24 pt.

FULLER
5A-65—24 pt.
10B-1120—44 pt.

SPICER
6252-6253—15 pt.
7751-7851—26 pt.
8251A—24 pt.
8255—24 pt.

TENSIONS

See pages 112-115

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tapet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap				
222, 322	Her OXLD	6-3 1/2 x 4 1/2	25-40-3200	5°B		.006	.008	.010	CH	J-6	14mm	.027	.020	6°B		
404SC	Her JXE-3	6-3 1/2 x 4 1/2	25-40	5°B		.010	.008	.010	CH	J-6	14mm	.027	.020	6°B		
420	Her JXB	6-3 1/2 x 4 1/2	25-40-3000	5°B		.010	.008	.010	CH	J-6	14mm	.027	.020	6°B		
420, 509C, 509SC, 520	Her JXC	6-3 1/2 x 4 1/2	25-40-3000	5°B		.010	.008	.010	CH	J-6	14mm	.027	.020	6°B		
420, 614C, 614SC, 520, 620	Her JXD	6-4 x 4 1/2	25-40-3000	5°B		.010	.008	.010	CH	J-6	14mm	.027	.020	6°B		
614SC, 520, 620	Her JXLD	6-4 x 4 1/2	25-40-3000	5°B		.010	.010	.010	CH	J-6	14mm	.027	.020	6°B		
622	Cont. K6330	6-4 x 4 1/2	40-2000 22°B			.022	.022	.024	CH	J-6	14mm	.027	.020	6°B		
660	Cont. T8427	6-4 1/2 x 4 1/2	35-43-2800 20°B			.022	.017	.022	CH	8 Com	14mm	.027	.020	10°B		
720	Cont. T8427	6-4 1/2 x 4 1/2	35-43-2800 20°B			.022	.017	.022	CH	8 Com	14mm	.027	.020	10°B		
722	Her. TOXB	6-4 1/2 x 5 1/2	25-30-2600	5°B		.010	.010	.016	AL	AT-8	14mm	.027	.020	2°B		
920	Cont. R8572	6-4 1/2 x 5 1/2	50-55-2600 17°B			.024	.020	.024	CH	5 Com	14mm	.027	.020	5°B		
921	Cum. HB800	6-4 1/2 x 6	55-1800						Diesel							
921R	Cum. HRB800	6-5 1/2 x 6	55-1800						Diesel							
950	Cum. NHRBS	6-5 1/2 x 6	30-50-2100						Diesel							
951	Buda SDA-844	6-5 1/2 x 6 1/2							Diesel							

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
Her OXLD	48 lb. for 1 in. defl.		2 1/2	2 1/2
Her JXE-3, JXB, JXC, JXD	80-85 at 1.584 length		2 1/2	2 1/2
Her JXLD	112 at 1.828 length*		2 1/2	2 1/2
Her WXLC, WXLD	97-107 at 2 1/2 length		3 1/2	3 1/2
Her TDXB	47 1/2-52 1/2 at 2 1/2 length		3 1/2	3 1/2
Cont. T8427	97-107 at 2 1/2		3 1/2	3 1/2
Cont. R8572	65-73 at 1 1/2		2 1/2	2 1/2
Cum. HB800, HRB800	26-32 at 1 1/2		1 1/2	1 1/2
Cont. K6330	67-73 at 2 1/2 length		2 1/2	2 1/2
Cummins NHRBS	32-38 at 2 1/2 length		2 1/2	2 1/2
Buda SDA-844	129-143	2	83-91	2 1/2
	121-131	1.110	77-85	1.016
	104/114	1 1/2	74/82	2 1/2
	200/210	2 1/2	76/86	2 1/2

*Free Length.

1—Inner.

0—Outer.

*Data shown with 4 active coils; with 5 active coils; 55.6 lb. at 1.984 in. length.

LUBRICATION

MODEL	ENGINE		TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range		Summer	Winter	Summer	Winter	Summer	Winter	
404SC, 509SC, 614C, 606C	Summer	Winter	140	90	A	B	140EP	140EP	140
222, 322, 420, 520, 620, 622, 614SC	40	30	140GO	90GO	A	B	140EP	140EP	140
660, 720, 921R, 950, 951	40	30	140GO	90GO	A	B	140EP	140EP	140GO
722	40	30	140C	140C	A	B	140EP	140EP	140GO
920, 921	40	30	50MO	50MO	A	B	140EP	140EP	140GO

Note—Heavy-duty detergent (HD) engine oil recommended for heavily worked and highway trucks; premium-type engine oil for city trucks and intermittent operation.

A—Clark spiral bevel axles, 140EP; hypoid 90HYP. Eaton 2-speed, 90EP, 140EP above 100°; hypoid 90MPGL. Timken spiral bevel axles 140GO; hypoid 140MPGL; worm drive 140GO.

B—Clark spiral bevel axles 90EP; hypoid 90HYP. Eaton 2-speed 90EP; hypoid 90MPGL. Timken spiral bevel 140GO; hypoid 140MPGL; worm drive 140GO.

Truck Data

DIAMOND T

d—Capacities shown are for standard axles. The following optional axles are furnished on certain models.

CLARK	18601—22 pt.	U-200P—38 pt.
R-950—9 pt.	20500—22 pt.	U-300—39 pt.
R-1000—11 pt.	22501—32 pt.	S-200P—38 pt.
R-1250—14 pt.	TIMKEN	SW-3012—17 pt.
EATON	L-100—23 pt.	SD-3010—14 pt.
1350—13 pt.	L-200—31 pt.	SW-3010—14 pt.
13600—13 pt.	L-300—29 pt.	SD-462W—20 pt.
16500—17 pt.	Q-200—34 pt.	SW-456W—20 pt.
16600—20 pt.	Q-300—32 pt.	SBD1055—19 pt.
18500—20 pt.	R-100—30 pt.	SBD1555—22 pt.
18501—20 pt.	R-200—36 pt.	SFD460—26 pt.
18600—22 pt.	R-300—34 pt.	



All Current Models

If optional engine used, see pages 112-115.

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
222, 322	1/8	1	3	9
404SC, 509SC, 420, 520	1/8	1	1 1/2	8 1/2
509C, 614C, 614SC, 620	1/8	1	1 1/2	8 1/2
622	1/8	1	1 1/2	8 1/2
720, 722	1/8	1	1 1/2	8 1/2
660, 606C	1/8	1	1 1/2	8
920, 921, 921R	1/8	1	3	8 1/2
950	1/8	1	3	0
951	1/8	1	3	0

C—With Spicer transmission 50MO summer and winter.

MPGL—Multi-purpose gear lubricant. GO—Straight mineral gear oil. MO—Motor oil. EP—Extreme pressure lube. HYP—Heavy-duty hypoid tube.

*—921, 921R—Above 80° SAE30; 20°-80°, SAE 20; below 20° and in newly rebuilt engines, 10.

†—Model 950—Engine viscosity and Temperature range—30-10.

DODGE



Series B-3-B, B-3-C, B-3-D, B-3-PW, B-3-F, B-3-G, B-3-H, B-3-J, B-3-K, B-3-R, B-3-T, B-3-V, B-3-Y

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. of R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before	Spark Occurs Flywheel Teeth B-Before	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake	Exhaust	Make	Type	Size	Gap				
B-3-B, B-3-C	Own T-395	6 3 1/4 x 4 1/2	40@800	128	5B	.010	.014	AL	Resistor	14mm	.035	.020	TC	TC	120
B-3-D	Own T-310	6 3 1/4 x 4 1/2	40@900	9B	5B	.010	.014	AL	Resistor	14mm	.035	.020	2°A	7/8A	125
B-3-DU, B-3-EU	Own T-164	6 3 1/4 x 4 1/2	40@800	8B	5B	.010	.014	AL	Resistor	14mm	.035	.020	2°A	7/8A	125
B-3-PW	Own T-137	6 3 1/4 x 4 1/2	40@800	8B	5B	.010	.014	AL	Resistor	14mm	.035	.020	2°A	7/8A	125
B-3-F, B-3-G	Own T-314	6 3 1/4 x 4 1/2	40@800	12B	5B	.010	.014	AL	Resistor	14mm	.035	.020	TC	TC	130
B-3-H, B-3-HH	Own T-315	6 3 1/4 x 4 1/2	40@800	12B	5B	.010	.014	AL	Resistor	14mm	.035	.020	TC	TC	130
B-3-HM, B-3-HHM	Own T-323	6 3 1/4 x 4 1/2	40@800	12B	5B	.010	.014	AL	Resistor	14mm	.035	.020	TC	TC	130
B-3-J, B-3-KA	Own T-318	6 3 1/4 x 4 1/2	40@800	12B	5B	.010	.018	AL	Resistor	14mm	.035	.020	2°A	7/8A	130
B-3-JM, B-3-KMA	Own T-330	6 3 1/4 x 4 1/2	40@800	12B	5B	.010	.018	AL	Resistor	14mm	.035	.020	2°A	7/8A	130
B-3-R	Own T-320	6 3 1/4 x 4 1/2	50@1000	12B	9B	.010	.018	AL	Resistor	14mm	.035	.020	1°A	7/8A	110
B-3-T, B-3-V	Own T-322	6 3 1/4 x 5	50@1000	12B	9B	.010	.018	AL	Resistor	14mm	.035	.020	TC	7/8A	120
B-3-Y	Own T-324	6 4 x 5	50@1000	20B		Hyd	Hyd	AL	Resistor	14mm	.035	.020	2°A	7/8A	133
B-3-YX	Own T-325	6 4 x 5	50@1000	20B		Hyd	Hyd	AL	Resistor	14mm	.035	.020	2°A	7/8A	133

LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
B-3-B, B-3-C	30 above 32	20W@10° to 32°	10W below 10°	90	90A	90	90A	90	90	C
B-3-D	30 above 32	20W@10° to 32°	10W below 10°	90	90A	90	90A	90	90	C
B-3-DU, B-3-EU	30 above 32	20W@10° to 32°	10W below 10°	90	90A	90	90A	90	90	C
B-3-PW	30 above 32	20W@10° to 32°	10W below 10°	90	90A	90	90A	90	90	C
B-3-F, B-3-G	30 above 32	20W@10° to 32°	10W below 10°	90	90A	90	90A	90	90	C
B-3-H, B-3-HH	30 above 32	20W@10° to 32°	10W below 10°	90	90A	90	90A	90	90	C
B-3-HM, B-3-HHM	30 above 32	20W@10° to 32°	10W below 10°	90	90A	90	90A	90	90	C
B-3-J, B-3-KA	30 above 32	20W@10° to 32°	10W below 10°	90	90A	140	90A	90	90	C
B-3-JM, B-3-KMA	30 above 32	20W@10° to 32°	10W below 10°	90	90A	140	90A	90	90	C
B-3-R	30 above 32	20W@10° to 32°	10W below 10°	90	90A	140	90A	90	90	C
B-3-T, B-3-V	30 above 32	20W@10° to 32°	10W below 10°	90	90A	140	90A	90	90	C
B-3-Y	30 above 32	20W@10° to 32°	10W below 10°	90	90A	140	90A	90	90	C
B-3-YX	30 above 32	20W@10° to 32°	10W below 10°	90	90A	140	90A	90	90	C

C—Universal joint grease.
A—SAE 80 below -10°.
*—Use 5W below -10°.
†—Use 10% kerosene below -10°.

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
All Models except as listed below	111	1 3/4	42 1/2	1 3/4
B-3-R, B-3-T, B-3-V	108	1 3/4	42 1/2	2
B-3-Y, B-3-YX	125	1 1/2	70	2

CAPACITIES

MODEL	LUBRICANT CAPACITY				
	Engine Quarts	Trans-mission Pints	Rear Axle Pints	Front End Pints	Brake System Capacity, Quarts
B-3-B, B-3-C	3 1/2	3 1/2	17 1/2	17 1/2	
B-3-D	3 1/2	3 1/2	17 1/2	17 1/2	
B-3-DU, B-3-EU	3 1/2	3 1/2	17 1/2	17 1/2	
B-3-PW	3 1/2	3 1/2	17 1/2	17 1/2	
B-3-F, B-3-G	6 1/2	11	19 1/2	19 1/2	
B-3-H, B-3-HH	5 1/2	11	19 1/2	19 1/2	
B-3-HM, B-3-HHM	5 1/2	11	19 1/2	19 1/2	
B-3-J, B-3-KA	7	10-20	21 1/2	21 1/2	
B-3-JM, B-3-KMA	9	10-20	21 1/2	21 1/2	
B-3-R	9	20	30 1/2	30 1/2	
B-3-T, B-3-V	9	23 1/2	30 1/2	30 1/2	
B-3-Y	16	31	34	34	
B-3-YX (6-wheeler)	16	14 1/2	34	34	

*—Add one quart for oil filter.

†—Each axle.

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
Auto-Lite 1-M-100D	100	15	Pos
Auto-Lite 1H-105D	105	15	Pos
Auto-Lite 1H-105D	105	15	Pos
Auto-Lite 1-M-100D	100	15	Pos
Auto-Lite 2M-114D	114	17	Pos
Auto-Lite 2M-114D	114	17	Pos
Auto-Lite 2M-114D	114	17	Pos
Auto-Lite 2H-120D	120	17	Pos
Auto-Lite 2H-120D	120	17	Pos
Auto-Lite T-3-17	136	17	Pos
Auto-Lite 4-H-152-R	152	19	Pos
Auto-Lite 4-H-152-R	152	19	Pos
Auto-Lite 4-H-152-R	152	19	Pos

TENSIONS

MODEL	Cylinder Head (pounds feet)	Main Bearings (pounds feet)	Connecting Rod Bearings (pounds feet)
All Models except as listed below	Nuts 52-57 Cap Screws 65-70	80-85	45-50
B-3-R, B-3-T, B-3-V, B-3-Y, B-3-YX	55-60 Hot	85-90	50-75

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
B-3-B, B-3-C	1 1/2	1 1/2	4° 10'	4°
B-3-D	1 1/2	1 1/2	3° 47'	4°
B-3-DU, B-3-EU	1 1/2	1 1/2	2 1/2	4°
B-3-PW	1 1/2	1 1/2	1 1/2	4°
B-3-F, B-3-G	1 1/2	1 1/2	2° 38'	4°
B-3-H, B-3-HH	1 1/2	1 1/2	2° 14'	4°
B-3-HM, B-3-HHM	1 1/2	1 1/2	2° 14'	4°
B-3-J, B-3-KA	1 1/2	1 1/2	2° 14'	4°
B-3-JM, B-3-KMA	1 1/2	1 1/2	2° 14'	4°
B-3-R	1 1/2	1 1/2	3° 40'	4°
B-3-T, B-3-V	1 1/2	1 1/2	2° 53'	4°
B-3-Y	1 1/2	1 1/2	2° 53'	4°
B-3-YX	1 1/2	1 1/2	2° 53'	4°

*—For "V" models 130-142" wheelbase, 5 1/2" for 154-172-190" wheelbase.
†—For "Y" models 130-142" wheelbase, 5 1/2" for 154-172-190" wheelbase.

CAPACITIES

MODEL	LUBRICANT CAPACITY			
	Engine Quarts	Transmission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
TH, TH339	6	11	B	27
GR-6	10	11	C	27
RH	7	16A	12	31½
JH	7	16	D	32½
KH, LH	10	24A	F	32½

A—Aux. trans., 8 pt.
 B—With Tim H100, 20 pt.; H200, 28 pt.; H300, 26 pt.
 C—With Tim L100, 23 pt.; L200, 31 pt.; L300, 29 pt.
 D—With Tim Q100, 31 pt.; Q200, 34 pt.; Q300, 32 pt.
 E—With Tim S200, 38 pt.; S300, 39 pt.
 F—With Tim U200, 38 pt.; U300, 39 pt.

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded	AABM Group No.
TH, TH339	110	13	Pos	2E
GR-6, RH, JH, KH, LH	152	19	Pos	4

TENSIONS

ENGINE MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
Her WYC-3	60	*105 **70	53
Her JXD	75	*60 **52	56
Her WXL3	75	*63 **122	52
Her RXB, RXC	75	*105 175	80
Her RXLD	80	*70 **60	80
Her JXLD	75		56

*—Front and intermediate.
 **—Center and rear.



Series TH, RH, JH, KH, LH, GR-6

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing pages 112-115

TUNE UP

TRUCK MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap				
TH, TH339	Her JXD	6-4x4½	26-1000	5°B		.008	.008	.010	AL	A5B	14mm	.025	.020	6°B		
GR-6	Her JXLD	6-4x4½	26-1000	5°B		.008	.008	.010	AL	A5B	14mm	.025	.020	6°B		
RH	Her WXC-3	6-4½x4½	26-1000				.016	.016	AL	A5B	14mm	.025	.020			
JH	Her WXL3	6-4½x4½	26-1000	5°B			.012	.016	AL	A5B	14mm	.025	.020	TC		
KH	Her RXB	6-4½x5½	26-1000	2°A		.010	.010	.016	AL	A5B	14mm	.025	.020			
LH	Her RXC	6-4½x5½	26-1000	2°A		.010	.010	.016	AL	A5B	14mm	.025	.020			
	Her RXLD	6-4½x5½	26-1000	2°A		.010	.010	.016	AL	AT8	14mm	.025	.020			

VALVE SPRINGS

ENGINE MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
JXD	58	1.594	43	1.920
WXL3	102	2½	50	2½
RXB, RXC	102	2½	50	2½
RXLD	102	2½	50	2½
JXLD	58	1.594	43	1.920

FRONT END

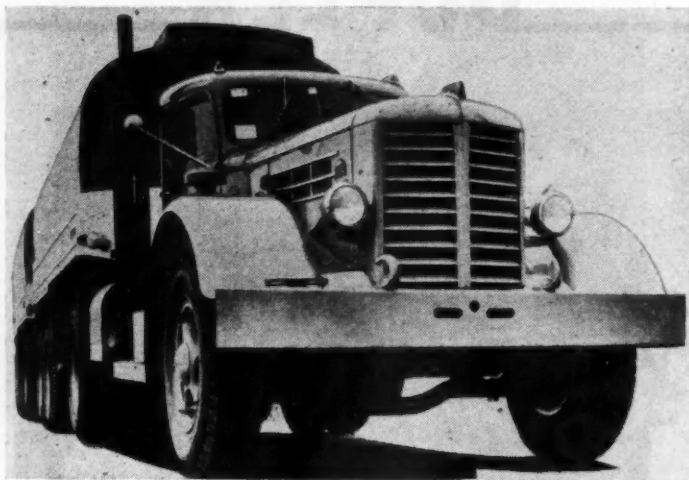
TRUCK MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
TH, TH339	1/8-3/8	1°	2°	8°
RH, GR-6, JH, KH, LH	1/8-3/8	1°	2°	5½°

LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
TH, TH 339	40 above 80°	30@32° to 80°	20W below 32°	140	90	140 Hyp	90 Hyp	A	A	B
RH, JH, KH, LH, GR-6	50 above 80°	40@32° to 80°	20W below 32°	149	90	140 H/p	90 Hyp	A	A	B

Hyp—Hypoid gear lube A—Special steering gear lube. B—Chassis lube

FEDERAL



Series 1600T, 1800T, 2500T, 2900T, 3000T, 3400T, 4400T,
45M, 645M, 55M, 60U, 65M, 663M, 664M

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing pages 112-115

CAPACITIES

MODEL	LUBRICANT CAPACITY				
	Engine Quarts	Trans-mission Pints	Rear Axle Pints	Front Axle Pints	Cooling System Capacity, Quarts
1600T	6	4	3-8 1/2	2	26
1800T	9	4	7	2	26
2500T	9	13	10-13	2	26
2900T, 629M Series	9	13*	12A	2	26
35M, 35M2, 635M	8	20*	12A	2	26
45M, 45M2, 645M	8	20*	16A	2	31
55M, 55MA	8	20*	19	2	31
60VA, 60U2	14	12**	38	3	31
65M2, 65MA	14	12**	40	3	40
663MA, 664MA, 664MAB	14	12**	40A	3	40
2501T, 2502T	7				23

*—In "MA" Models add 10 pts. for aux. trans.
**—In "MA" Models add 15 pts. for aux. trans.
A—On 6-wheelers, same for each rear axle.

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded	SAE Group No.
1600T, 1800T, 2500T, 2900T, 3000T	136	17	Pos	3
45M, 645M, 55M, 60M, 3400T, 4400T	135	19	Pos	3
65M2, 65MA, 663MA, 664MAB, 664MA	152*	19	Pos	3

*—2 Batteries.

TENSIONS

MODEL	Cylinder Head (pounds-foot)	Main Bearings (pounds-foot)	Connecting Rod Bearings (pounds-foot)
1600T, 1800T, 2500T, 2900T, 629M Series	75	*60 **70	56
3400T, 4400T, 45M, 645M, 55M, 60M, 65M, 663M, 664M Series			

See data under CONTINENTAL, PAGE 112

*—Center and rear. **—Front and intermediate.

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tapet Clearance for Valve Timing		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG			Breaker Point Gap	Spark Occurs °C B-Before A-After	Spark Occurs Fly Wheel Teeth °C B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake	Exhaust	Intake	Exhaust	Make	Type	Size	Gap			
1600T Series (1952)	Her OXLD	6-3 1/2 x 4 1/4	26-1600	5°B	Var	.008	.008	.010	.010	Opt		.025	.020	N	N	Opt
1800T Series	Her JXB	6-3 1/2 x 4 1/4	40-2500	5°B		.008	.008C	.010C	.010C	CH	J10COM	14mm	.025	10°B	3B	90
2500T Series	Her JXC	6-3 1/2 x 4 1/4	40-2500	5°B		.008	.008C	.010C	.010C	CH	J10COM	14mm	.025	10°B	3B	90
2900T, 629M Series	Her JXD	6-4 x 4 1/4	40-2500	5°B		.008	.008C	.010C	.010C	CH	J10COM	14mm	.025	10°B	3B	90
3000T Series	Her JXLD	6-4 x 4 1/4	40-2500	5°B		.010	.010	.010	.010	CH	J10COM	14mm	.025	10°B		
3400T, 4400T Series	Con T6371	6-4 1/2 x 4 1/4	40-2500	16°B		.022	.017	.017	.017			18mm	.025			
45M, 55M, 645M Series	Con T6427	6-4 1/2 x 4 1/4	55-2600	16°B		.022	.017	.017	.017			18mm	.025			
60M Series	Con U6501	6-4 1/2 x 5 1/4	55-2600	5 1/2°B		.014	.012	.012	.012	CH	6COM	18mm	.025	15°B		
65M, 663M, 664M Series	Con R-6602	6-4 1/2 x 5 1/4	55-2600	6 1/2°B			.017	.017	.017	CH	8COM	18mm	.025	7°B		90

C—Cold.

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
1600T, 1800T, 2500T, 2900T Series	52	1 1/8	31	1 1/8
3000T, L Series		112 at 1.628 length		
3400T, 35M, 635M, 45M, 645M, 55M, Series 4400T	O. 129	1.458	71	1 1/4
	I. 57	1 1/8	12.8	1 1/8
60U Series	O. 129	1 1/8	56 1/4	2 1/4
	I. 57	1 1/8	22 1/2	2 1/4
65M, 663M, 664M Series	O. 160-170	1 1/4	67-73	2 1/4
	I. 82-88	1 1/4	33-37	2 1/4

I—Inner. O—Outer.

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
All Models (1944-52)	1/4	1	3	1

LUBRICATION

MODEL	ENGINE		TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range		Summer	Winter	Summer	Winter	Summer	Winter	
All Models (1944-52)	N-40, H-50 @ 50° to 110°	30@15° to 50°	10W@-20° to 15°	160	80	160	80		160

N—Normal service. H—Heavy duty.

CAPACITIES

MODEL	LUBRICANT CAPACITY				Cooling System Capacity, Quarts
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Axle Pints	
F1 (6-cyl.)	5A	2 1/2 BC	3 1/2	3 1/2	15
F1 (8-cyl.)	5A	2 1/2 BC	3 1/2	3 1/2	23
F2, F3 (6-cyl.)	5A	5B	3	3	18
F2, F3 (8-cyl.)	5A	5B	3	3	23
F3, Parcel Del.	5A	5 1/2	3	3	15
F4, F5, F5SB, F6SB (6-cyl.)	5A	5BD	5E	5E	16
F4, F5, F6 COE, F5SB, F6SB (8-cyl.)	5A	5BD	5E	5E	23
F6, F6 COE (8-cyl.)	5A	5D	10E	10E	23
F6, F6 COE (254 cu in. 6)	6A	8	10E	10E	19.3
F7	8A	8 1/2	11	11	24.75
F8	8A	8 1/2	22F	22F	24.75

A—Refill shown—when filter replaced add 1 qt.
 B—Optional 3-speed H. D. Transmission—5 1/2 pts.
 C—Optional 4-speed Transmission—5 pts.
 D—Optional 4-speed Synchro-Silent Trans.—8 pts.
 E—Optional 2-speed axle on F6 or F6—15 pts.
 F—Optional 2-speed axle—19 pts.
 G—With 2-speed axle—20 pts.

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
F1 thru F6 (6-cyl.)	100	17	Pos
F1 thru F4 (8-cyl.)	90	15	Pos
F3 and F6 (8-cyl.)	100	17	Pos
F3 Schoolbus	120	17	Pos
F7 and F8	120	17	Pos

TENSIONS

MODEL	Cylinder Head (pounds-foot)	Main Bearings (pounds-foot)	Connecting Rod Bearings (pounds-foot)
F1 through F6	65-70	95-105	45-50
F7 and F8	65-70	120-130	52-60

TUNE UP

TUNE UP	MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Flywheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
					°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap				
F-1, F-2, F-3, F-4, F-5, F-6, F-8	Own 8MTH	6-3.3x4.4	60-2000	11°B	.....	.015	A	B	CH	H-9	14mm	C	.025	TC	.....	110
F-4	Own 8RT	6-3.5x4.4	60-2000	11°B	.....	.015	A	B	CH	H-9	14mm	C	.025	TC	.....	110
F-1, F-2, F-3, F-4, F-5, F-6, F-7, F-8	Own 8RT	8-3.1x3 1/2	60-2000	TC	.....	.015	B	E	CH	H-9	14mm	C	.015	2°B	.....	110
		8-3.1x4 1/2	60-2000	5°B	.....	.015	.010-.012, .014-.016		CH	H-9	14mm	C	.015	4°B	.....	112
A-.009-.011 cold.		B-.013-.015 cold.		C-.025-.028.		E-.017-.019 cold.											

A—.009-.011 cold.

B—.013-.015 cold.

C—.025-.028.

E—.017-.019 cold.

VALVE SPRINGS

MODEL ENGINES	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
6-cyl. 225 engine	112-120	1.75	47-53	2.109
6-cyl. 254 engine	112-120	1.75	47-53	2.109
6-cyl. 230 engine	76-80	1.84	37-40	2.13
8-cyl. 337 engine	140-152	1.32	62-68	1.98

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
F-1, F-2, F-3	0-1/8	1/8-1	2 1/4-4	8-8 1/4
F-4 through F-8	0-1/8	1/8-1	1-3	8-8 1/4

LUBRICATION

MODEL	ENGINE		TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range		Summer	Winter	Summer	Winter	Summer	Winter	
F-1	F-7 and F-8 Heavy Duty Oils recommended. F-1 thru F-6 Regular Premium or Heavy Duty oils depending on type of service. Temps. above +32°F: SAE 30. Min. Temps. above +10°F: SAE 20 or 20W. Min. Temps. above -10°F: SAE 10 or 10W. Lower than -10°F: 10W plus 10% kerosene.		90EP	80EP	90HM	90HM	90EP	90EP	140EP
F-2, F-3, F-4, F-5, F-6 COE			a140EP	90EP	140EHM	90EHM	90EP	90EP	140EP
F-6, F-6 COE			140EP	90EP	190HM	*90HM	90EP	90EP	140EP
F-7, F-8			140EP	90EP	190HM	*90HM	90EP	90EP	140EP

EP—Mild extreme pressure gear oil.

HM—Hypoid or multi purpose lubricant.

*—Temps. below -10°F use SAE 80.

†—Temps. above 100°F use SAE 140.

F-3 parcel delivery SAE 90 mild E. P. gear oil.

†—F-3 parcel delivery SAE 80 mild E. P. gear oil.

EHM—Mild E. P. gear oil, or multi purpose lube.

Truck Data

FORD



Models F-1, F-2, F-3, F-4, F-5, F-6, F-7, F-8

FWD



Models LD, HA, HG, HR, HRC, H6x6, HRC6x6, SU, YU, ZU, M7, M7D, M10, M10D, MU6x6, M6x6, M6x6D

CAPACITIES

MODEL	LUBRICANT CAPACITY			
	Engine Quarts	Transmission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
LD	6	6	9C	16
HA, HAY	6	20	6A	28
HR, HRY, HG, HGY, H6X6G	12	20	6A	28
HRC, HC6X6G	16	20	6A	28
SU	12	24	8A	32
SUD	16	24	8A	47
AU	16	24	8A	46
YU	16	28	12A	46
YUD	16	28	12A	47
ZU	20	28	16A	46
ZUD	20	28	16A	47
M7G, M10G, MU6X6G, M6X6G	20	28	16A	64
M7D	21	28	16A	64
M10D, M6X6D	24	28	16A	63
HC6X6D, HCY6X6D	15	20	6A	30
HCY6X6G	16	20	6A	46
MU6X6D	20	28	16A	63

A—Same for front axle. C—Front axle 6.

BATTERY

MODEL	Amp. Hr. Capacity	Numbers of Plates	Terminal Grounded	SAE Group No.	AGM Group No.
LD	130	19	Pos	4H	3
HA, HR, HG, SU*, YU*	150	19	Pos	4H	4
ZU*, M6X6*, M7*, M10*	150	19	Pos	BD	80
M7D**, M10D**, M6X6D**	153	19	Pos	4H	4
H6X6, MU6X6*	153	19	Pos	4H	4

*—2 Batteries. **—4 Batteries

TENSIONS

See Engine, Pages 112-115, GMC Tension Data, page 91

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG			Breaker Point Gap	Spark Occurs °C B-Before A-After	Spark Occurs Flywheel Teeth B-Before A-After	Cranking Pressure at Cranking Speed		
				°C	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size					Gap	
LD	Her OXLD3	6-3 1/2 x 4 1/4	35-3200	5°B	1 3/4 B	.006	A	B	AL	AT8	14mm	.025	.020	6°B	13 1/2 B	110	
HA, HAY	Wau 195GKA	6-4 1/2 x 4	30-2800	10°B	6B	.034*	B	J	CH	8COM	18mm	.025	.020	7°B	23 1/2 B	110	
HR, HRY, HG, HGY, H6X6G	Wau MZA	6-4 1/2 x 4 3/4	40-2800	8°B	3B	.006	C	D	CH	7COM	14mm	.025	.020	5°B	2°B	110	
HRC, HC6X6G, HCY6X6G	Wau 140GKB	6-4 1/2 x 5 1/2	40-2250	5°A	1 3/4 A	.056*	F	E	CH	H9	18mm	.025	.020	TDC	TDC	140	
SU	Wau SRKR	6-4 1/2 x 5 1/2	40-2250	8°A	3A	.004	C	E	CH	J9	14mm	.025	.020	4°B	1 1/2 B	123	
SUD, YUD, HC6X6D, HCY6X6D	GMC 4-71	4-4 1/2 x 5	45													390	
AU, ZU	Wau 140GZ	6-4 1/2 x 5 1/2	40-2250	5°A	1 3/4 A	.056*	F	H	CH	H9	18mm	.025	.020	TDC	TDC	140	
YU	Wau 140GK	6-4 1/2 x 5 1/2	40-2250	5°A	1 3/4 A	.036*	F	H	CH	H9	18mm	.025	.020	TDC	TDC	140	
ZUD, MU6X6D	GMC 6-71	6-4 1/2 x 5	45													390	
M7G, M10G, MU6X6G, M6X6G	Wau 145GK	6-5 1/2 x 6	40-2400	5°A	2A	.064*	F	G	CH	H9	18mm	.025	.020	TDC	TDC	140	
M7D, M10D, M6X6D	Buda 844	6-5 1/2 x 6 1/2	30-1200	20°B		.010	.015	.015								380	
A—.010-.012 cold.		B.014-.016 cold.		C—.008-.010 cold.		D—.019-.021 cold		E—.024-.026 cold.		F—.012-.014 cold.		G—.023-.025 cold.					
H—.018-.020 cold.		J—.022-.024 cold.		*—Set lash at valve given at valve, valve should then open TDC.													

A—.010-.012 cold. B.014-.016 cold. C—.008-.010 cold. D—.019-.021 cold. E—.024-.026 cold. F—.012-.014 cold. G—.023-.025 cold.
H—.018-.020 cold. J—.022-.024 cold. *—Set lash at value given at valve, valve should then open TDC.

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
LD	39	1 1/2	18	1 1/2
HA, HAY	124	1 1/2	46	2 1/2
HR, HRY, HG, HGY	100	1 1/2	64	2 1/2
HRC, AU, YU, ZU	88-96	2 1/2	31-42	1 1/2
SU, HC6X6G	89-99	2 1/2	54-64	2 1/2
SUD, YUD, ZUD, HC6X6D, HCY6X6D, MU6X6D				
M7G, M10G, MU6X6G, M6X6G	105-115	3 1/4	65-75	3 1/4
M7D, M10D, M6X6D	145-155	2 1/2	62-68	2 1/4
H6X6G	100	1 1/2	64	2 1/2
HCY6X6G	83-99	2 1/2	54-64	2 1/4

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
LD	1/8-1/4	1/4	1	0
HA	1/8-1/4	1	2	0
HAY, HR, HRY, HRC, HG, HGY, SU, SUD, AU, YU, YUD, ZU, ZUD, H6X6G, HC6X6G, HC6X6D, HCY6X6G, HCY6X6D, MU6X6G, MU6X6D	1/8-1/4	1	2	0
M7G, M7D, M10G, M10D, M6X6G, M6X6D	1/4	0	5	0

LUBRICATION

MODEL	ENGINE			TRANSMISSION		FRONT AND REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
HR, HRY, HG, HGY, H6X6G, HRC, HC6X6G, HCY6X6G, SU, AU, ZU, YU, M7G, M10G, MU6X6G, M6X6G	(S)L30, H40	(MW)L20, H30	(W)L10W, H20W	140	90	90	80	140	90	140-90
HA, HAY	(S)L20, H30	(MW)L10W, H20	(W)L10W, H10W	140	90	90	80	140	90	140-90
SUD, YUD, HC6X6D, HCY6X6D, ZUD, MU6X6D	30 above 30°	20W@0-30°	10W below -10°	140	90	90	80	140	90	140-90
LD	(S)L30, H30			140	90	90	80	140	90	140-90
M7D, M10D, M6X6D	90 above 90°	30@32° to 90°	10 below 32°	140	90	90	80	140	90	140-190

H—Heavy duty. L—Light duty. EP—Extreme pressure lube. S—Summer. W—Winter. MW—Mild winter. *—Below 0°, L10, H10. †—Below 30°, L20, H20.

CAPACITIES

MODEL	LUBRICANT CAPACITY				Cooling System Capacity, Quarts
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Axle Pints	
100-22	8	1 1/2	4 1/2	17	
150-22	8	1 1/2	6	17	
P152-22	8	12d	6	17	
250-22	8	6	6	17	
280-22	8	6	11	17	
300-24	8	6	11	18	
S300-24	8	6	11hm	18	
350-24	8	6b	12h	18	
F350-24	8	6b	12h	18	
HCS-400	8	12	12h	18	
HCW-400	8	6cb	8 1/2	18	
HC-450	8	12	20p	18	
D450-37	18	12	20	20	
HCS-450	8	12	20p	18	
HC-470	8	12	22q	18	
HF-470	8	12	22q	18	
620 HC, HCR, HF, HFR	9	14f	22q	25	
HCW-620	9	14	11t	25	
HC640H	9	14	22	27	
650 HDCR	11	14	22	26	
720 HCW	9	9f	22 1/2	25	
740 HC, HCR	9	9f	30r	27	
740 HDC, HDCR	11	9f	30r	26	
750 HC, HCR, HF, HFR	9	9f	20j	27	
750 HDC, HDCR, HDF, HDFS	11	9	20j	26	
750 HDCW	11	9	22 1/2	26	
850 HC, HF	9	9ef	35k	27	
850 HCW	9	9ef	32 1/2	27	
900 HDC	15	9g	38	37	
900 HDCR	15	9	32	37	
950 HDCW	15	9g	17 1/2	37	
970 HDCW	15	9	32 1/2	37	

*—Standard trans. and axle.
 †—Each axle.
 a—4-spd. trans., 6 pts.
 b—With 5-spd. trans., 12 pts.
 c—Aux. trans., 6 pts. torque divider, 3 pts.
 d—12 qts. Automatic Transmission Fluid.
 e—5552, 5553, 5-spd. trans., 9 pts.
 f—Aux. trans., 8 pts.
 g—Aux. trans., 12 pts.
 h—With 2-spd. axle, 13 pts.
 i—Torque divider 3 pts.
 j—Heavy duty, 2-spd. axle, 32 pts.
 k—2-spd. axle, 30 pts.

VALVE SPRINGS

ENGINE MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
228, 248, 270	124-140	1.505	53-63	1.821
318, 360	145-157	1 1/4	67 1/2-74 1/2	1 1/4
428, 503	160-172	1 1/2	67 1/2-74 1/2	1 1/4
All Diesels	140	1 1/2	44	2 1/4

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tappet Clearance for Valve Timing		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake	Exhaust	Intake	Exhaust	Make	Type	Size	Gap			
100-22, 150-22, P152-22, 250-22, 280-22	Own 228	6-3 1/4x3 1/4	35-40	14°B	...	.014	.012	.020	.020	AC	44 COM	14mm	.030	A	5°B	110
300-24, S300-24, 350-24, F350-24, HCS-400, HCW-400	Own 248	6-3 1/4x3 1/4	35-40	14°B	...	.014	.012	.020	.020	AC	44 COM	14mm	.030	A	5°B	110
HC-450, HCS-450, HF-450, HC-470, HF-470, HCW-400	Own 270	6-3 1/4x4	35-40	14°B	...	.014	.012	.020	.020	AC	44 COM	14mm	.030	A	5°B	110
620 HC, HCR, HCW, HF, HFR	Own 360	6-4 1/4x4 1/2	35-40	16°B	...	.022	.012	.018	.018	AC	44 COM	14mm	.030	A	6°B	110
HC 640 H, HCW	Own 426	6-4 1/4x5	35-40	30°24°B	...	.022	.012	.018	.018	AC	44 COM	14mm	.030	A	6°B	110
740 HC, HCR, 750 HC, HCR, HF, HFR, 850 HC, HCW, HF, 890 HC	Own 503	6-4 1/4x5 1/2	35-40	30°24°B	...	.022	.012	.018	.018	AC	44 COM	14mm	.030	A	2°B	110
650, 740, 750 HDCR, 740, 750 HDC, HDF, 750 HDCW	Own 4-71	4-4 1/4x5	4°@Idle 25°@Gov.	†	†	a	b			Di esel						
900 HDCR, 900, 910, 940 HDC, 950, 970 HDCW	Own 6-71	6-4 1/4x5	4°@Idle 25°@Gov.	†	†	a	b			Di esel						
D450-37	Own 3-71	3-4 1/4x5	4°@Idle 25°@Gov.	†	†	a	b			Di esel						

A—.018"-.024". *—Minimum.
 a—Injector—Timing gage ht.—1.400".

†—Injection begins 13° before TDC; ends 3° before TDC. Air intake opens 46° before TDC; closes 46° after TDC.
 b—Exhaust valve—.008" GO—.010" NO GO (Hot).

LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
100-22 through F350-24	20 above 32°	10W below 32°		90MP	90MP(C)	90MP	90 MP(C)	No. 1 SG	No. 1 SG	90ES
HCS-400 through HF-470	20 above 32°	10W below 32°		50ES	50ES	90 Hyp(A)	90 Hyp(B)	No. 1 SG	No. 1 SG	50ES
HC-620 through HC-850	30 above 32°	10W below 32°		50ES	50ES	90 Hyp(A)	90 Hyp(B)	No. 1 SG	No. 1 SG	50ES
All Diesels	H30 above 32°	H20W — 30°-0°	H10W below 0°	50ES	50ES	90 Hyp(A)	90 Hyp(B)	No. 1 SG	No. 1 SG	50ES

H—Heavy duty. *—Worm axles straight gear oil.
 B—Use 80 Hyp below 0°. Hyp—Hypoid truck-type.

†—Except P152-22. ES—Aviation grade engine oil or heavy duty engine oil.
 No. 1 SG—No. 1 grade steering gear lubricant. MP—Multi-purpose gear lubricant.

A—Severe conditions use 140 Hyp. C—Use 80MP below 0°.

Truck Data

GMC

Series 100, 150, 250, 280, 300, 350 and DIESELS

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
100-22	100	15	Pos
150-22	100	15	Pos
P152-22	100	15	Pos
250-22	100	15	Pos
280-22	100	15	Pos
300-24	100	15	Pos
S300-24	125	19	Pos
350-24	100	15	Pos
F350-24	100	15	Pos
HCS-400	125	19	Pos
HCW-400	100	15	Pos
HC-450	100	15	Pos
HCS-450	125	19	Pos
HC-470	100	15	Pos
HF-470	100	15	Pos
620, 640, 650, 700, 720, 740, 750, 770, 850, 870, 890	115	17	Pos
All Diesels	205	27	Pos

TENSIONS

ENGINE MODEL	Cylinder Head (pounds feet)	Main Bearings (pounds feet)	Connecting Rod Bearings (pounds feet)
228, 248, 270	70-80	80-90	40-45
360	75-80	90-100	65-75
428, 503	75-80	90-100	80 min.
All Diesels	165-175	155-185	65-75

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
100-22	1/8-3/8	1°30'	2°	7°10'
150-22	1/8-3/8	1°30'	2°30'	7°10'
P152-22	1/8-3/8	1°30'	3°30'	7°10'
250-22	1/8-3/8	1°30'	2°30'	7°10'
280-22, 300-24, S300-24, 350-24	1/8-3/8	1°30'	2°30'	7°10'
F350-24	1/8-3/8	1°30'	3°	7°10'
HCS-400	1/8-3/8	1°	1°45'	5°
HCW-400, HC-450, HCS-450	1/8-3/8	1°	1°45'	5°
HC-470	1/8-3/8	1°	2°30'	5°
HF-470	1/8-3/8	1°	2°30'	4°
450 HF, HFR; 470 HF	1/8-3/8	1°	2°30'	4°
620 HC, HCR, HCW, HF, HFR; 650 HDCR; 720 HC, HCR, HCW; 740 HC, HCR, HDC, HDCR; 750 HC, HCR, HDC, HDCR, HDCW	1/8-3/8	30°1'	2°30'	4°
750 HF, HFR, HDF, HDFS; 850 HC, HCW; 900 HDC, HDCR; 950 HDCW; 970 HDCW	1/8-3/8	30°1'	2°30'	5°30'

*—Figures for vehicle loaded.

Vehicle light minimum caster 1°.

INTERNATIONAL



Models L, LB, LC, LF and LM Series

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing pages 112-115

CAPACITIES

MODEL

MODEL	LUBRICANT CAPACITY				Cooling System Capacity, Quarts
	Engine Quarts	Transmission Pints	Pass. Axle Pints	Drive Axle Pints	
L-110, 111, 112, 120, 121, 122	7	3a	4	17	
LM-120, 121, 122	7	6	4	17	
L-130, 131, 132	7	5a	4	17	
L-150, 151, 152, 153	7	5b	3	18	
LB-140	7	k	3	17	
LM-150, 151, 152	7	6	3	17	
L-160, 161, 162, 163, 164, 165, LC-160, 161, 162	7	8	9c	18	
L-170, 171, 172, 173, 175, LF-170, 171, 172	7	8d	9c	21	
L-180, 181, 182, 183, LC-180, 181, 182	7	12	11e	21	
L-184	7	12	20f	21	
L-174	7	8d	11e	21	
L-185	9	12h	20	26	
L-190, 191, 192, 193, 195	9	19	20f	26	
L-194, 200, 201, 202	9	19	19f	26	
LF-190, 191, 192	9	19	12	26	
L-204	9	19	38j	26	
L-205	9	24	18f	26	
L-210, 211	9	24	38j	26	
LF-210, 211, 212	9	24	11	26	

a—Optional transmission—6 pints.
b—Optional transmission—8 pints.
c—With optional 2-speed axle—13 pints.
d—With optional transmission—12 pints.
e—With optional 2-speed axle—20 pints.
f—With optional 2-speed axle—22 pints.
g—With optional 2-reduction axle—19 pints.
h—Optional transmission F-52 or F-52-C—10 pints.
i—Optional 2-speed axle—37 pints.
j—Two-speed trans. with torque converter. Converter holds 16 pts. Trans. holds 5 pts. Converter uses SAE 10 Regular.

BATTERY

MODEL

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded	SAE Group No.	AAIA Group No.
SD-220, SD-240	105	45	Pos	2	2
BD-269	135	57	Pos	3	3
RD-372, RD-406, RD-450	152	57	Pos	4	4

TENSIONS

MODEL

MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
SD-220, SD-240	85-95	75-85	45-55
BD-269	75-85	100-110	60-70
RD-372, RD-406, RD-450	100-110	100-110	75-85

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °C B-Before A-After	Spark Occurs °C Flywheel Teeth B-Before A-After	Comp. Pressure at Cranking Speed
				°C	Flywheel Teeth TC	Intake	Exhaust	Make	Type	Size	Gap				
L-110 to L-153, inc. LM-120 to LM-150, inc.	SD-220	6-3 1/8 x 3 1/8	15-20*	10°B	.....	.023	F	F	a	.....	14mm .030	.022	2°B	.....	.....
L-160 to L-165, inc. LC-160, 161, 162, LB-140	SD-240	6-3 1/8 x 4 1/8	15-20*	10°B	.....	.023	F	F	a	.....	14mm .030	.022	2°B	.....	.....
L-170 to L-184, inc. LC-180, 181, 182	BD-269	6-3 1/8 x 4 1/8	15-20*	5°B	.....	.023	F	F	b	.....	14mm .030	.....	3°B	.....	.....
L-185, L-190 to L-195, inc.	RD-372	6-4 1/8 x 4 1/8	15-20*	8°B	.....	.023	F	F	c	.....	14mm .030	D	5°B	.....	.....
L-200, 201, 202, 204, LF-190, 191, 192	RD-406	6-4 1/8 x 4 1/8	15-20*	8°B	.....	.023	F	F	c	.....	14mm .030	D	5°B	.....	.....
L-210, 211, LF-210, 211, 212	RD-450	6-4 1/8 x 5	15-20*	8°B	.....	.023	F	F	c	.....	14mm .030	D	5°B	.....	.....

*—Minimum at idle.

F—.018—.020.

D—.018—.024.

a—AC-95 COM, Champion J-8, Auto-Lite AN-7.

b—AC-45 Com., Champion J-8, Auto-Lite AN-7.

c—AC-43 Com., Champion J-6, Auto-Lite AN-5.

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
SD-220, SD-240	145	1.683	.....	2 1/8
BD-269	107	1.688	.....	2 1/8
RD-372, RD-406, RD-450	85 1/2	1.503	.....	2 1/8
	137	1.706	.....	2 1/8

*—Free length.

O—Outer.

I—Inner.

FRONT END

MODEL

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
L-110, 111, 112, L and LM-120, 121, 122, L-130, 131, 132	1/8-1/4	2	2-3	4
All Other Models	1/8-1/4	1	2-3	4

LUBRICATION

MODEL	ENGINE				TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range				Summer	Winter	Summer	Winter	Summer	Winter	
SD	M30 above 32°	20W above 10°	10W below 10°	.....	140a	90	140a	90	.....	.....	.....
BD, RD	M40 above 32°	20W above 10°	10W below 10°*	.....	140a	90	140a	90	.....	.....	.....
SD	H SAE 40†	.....	.....	.....	140a	90	140a	90	.....	.....	.....
BD, RD	H SAE 50†	.....	.....	.....	140a	90	140a	90	.....	.....	.....

*—Temperatures below -10° F, use SAE 10W + kerosene.

H—Highway service with sustained high engine speeds.

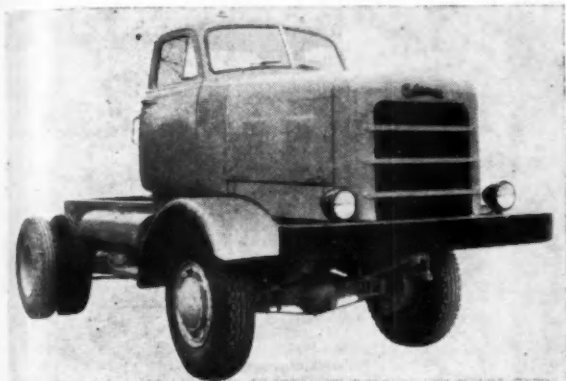
†—If starting ability will not permit, use next lower viscosity.

a—Use SCL, EP gear oil or multipurpose gear lubricant.

M—Multi-stop service, no sustained high engine speeds.

Truck Data

COLEMAN KENWORTH



Model G-55-S



Models 521 to 888

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 112-115

CAPACITIES

LUBRICANT CAPACITY

MODEL	Engine Quarts	Transmission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
KENWORTH 521, 522.....	20	16	38	54
523.....	20	16	17ea	54
524.....	20	16	32ea	54
548.....	20	16	26ea	54
552.....	20	16	26ea	54
584.....	20	16	28ea	54
585.....	10	24	30	58
825.....	20	16	32ea	54
829.....	10	24	14ea	58
888.....	28	16	.....	54
COLEMAN G-55-S.....	12	24	12	48

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded	AABM Group No.
KENWORTH All Gasoline Models.....	168*	21	Pos	4
All Diesel Models.....	168**	21	Pos	4
COLEMAN G-55-S.....	135**	21	Pos	5

*—2 Batteries. **—4 Batteries.

TENSIONS

MODEL	Cylinder Head (pounds feet)	Main Bearings (pounds feet)	Connecting Rod Bearings (pounds feet)
KENWORTH, Cum Wau 140GZB.....	430-450 175	310-330 125-133	105-115 95-100
COLEMAN, G-55-S.....	95-105	150-160	95-100

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake Tappet Clearance for Valve Timing	Exhaust	Make	Type	Size	Gap				
KENWORTH 521, 522, 523, 524, 548, 552, 584, 825.....	Cum HB-600	6-4 1/2 x 6	55	5°B	.....	.014	.022	.....	.....	Diesel 14mm	.025	.020	Tc	.....	525
585, 829.....	Wau 140GZB	6-4 1/2 x 5 1/2	40-2600	15°B	.....	.014C	.025C	.....	.....	.....	.....	.....	.....	.....	130
888.....	Cum NHB-600	6-5 1/2 x 6	55	20°B	.....	.014	.027	.....	.....	.....	.....	.....	.....	.....	.....
COLEMAN G-55-S.....	Bud LO-525	6-4 1/2 x 5 1/2	30-2000	10°B	.....	.009	.013	AC	44	14mm	.025	.025	35B	.....	.....

C—Cold

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ava.) Pounds	Length Inches	Pressure (Ava.) Pounds	Length Inches
KENWORTH 521, 522, 523, 524, 548, 552, 584, 825.....	136	2 1/4	87	2 1/4
888.....	109	1 1/4	78	2 1/4
585, 829.....	*127	1 1/4	67	2 1/4
.....	**70	1 1/4	30	1 1/4
COLEMAN G-55-S.....	100	2 1/2	75	2 1/4

*—Outer spring ** Inner spring.

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
KENWORTH 521, 522, 523, 524, 548, 585, 825, 829, 552.....	1/8 ± 1/8	1	2 1/2 - 3	5 1/4
584, 888.....	1/8 ± 1/8	1	1 1/2 ± 1/4	0
COLEMAN G-55-S.....	0 - 1/8	0	3+	0

LUBRICATION

MODEL	ENGINE		TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range		Summer	Winter	Summer	Winter	Summer	Winter	
KENWORTH 521, 522.....	(S)30	(W)20	*50	*50	140EP	90EP	140	140	140
523, 524, 548, 552, 584, 825, 888.....	(S)30	(W)20	*50	*50	140	90	140	140	140
829.....	(S)30	(W)20	140	90	140	90	140	140	140
585.....	(S)40, 50-70*	(W)20, below 30*	140	90	140EP	140EP	140	140	140
COLEMAN G-55-S.....	40, above 32°	20, below 32°	SAE 160	SAE 90	SAE 160	SAE 90	SAE 250	SAE 140	.....

S—Summer. W—Winter. *—Straight mineral oil. EP—Extreme pressure lube.

MARMON-HER.



Models DVL-4, LD7 and Q, R, V5, V6 Series

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing pages 112-115

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.H.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth	Intake	Exhaust	Make	Type	Size	Gap				
DVL-4 (1948-51)	Willys-CJ-3A	4-3 1/2 x 4 3/4	50-30	9°B	.....	.017	.014	AL	AN-7	14mm	.030	.020	TC	TC	118
LD7 and R Series, V5, V6	Ford 239	8-3 1/2 x 3 3/4	57-2000	TC	.....	.015	A	CH	H-9	14mm	C	.015	2°B	.....	110
Q Series	Ford 337	8-3 1/2 x 4 3/4	50-2000	14°B	.....	.....	B	CH	H-9	14mm	C	.015	4°B	.....	112
MH610, MH615	Her WXLCS	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MH620, MH625	Her RXLCS	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MH630	Her RXLDH6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

A—.010-.012 cold. B—.014-.016 cold. C—.029-.032.

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
DVL-4	116	1 1/4	50	2 1/2
LD7 and R Series, V5, V6	76-80	1.84	37-40	2.13
Q Series	140-152	1.32	62-68	1.68
MH610, MH615, MH620, MH625, MH630	.....	.....	.....	.....

See Page 113 For Hercules Specifications

LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
DVL-4	(S)30	(W)20	10W below 10°	140	90	140A	90A	140	140	140
LD7	30 above 32°	20W 10° to 32°	10W@-10° to 10°*	140	90	140B(Hyp)	90B(Hyp)	90EP	90EP	140
R-3, R-32, R-4	30 above 32°	20W 10° to 32°	10W@-10° to 10°*	140	90	140B	90B	90EP	90EP	140
R-5, R-6	30 above 32°	20W 10° to 32°	10W@-10° to 10°*	140	90	90B	90B	140	140	140
Q Series	30 above 32°	20W 10° to 32°	10W@-10° to 10°*	140	90	140B	140B	140	140	140
V5, V6	(S)30	(W)20	10W below 10°	140	90	140B	90B	90	90	140
MH610, MH615, MH620, MH625, MH630	50 above 32°	40 10° to 32°	30 below 10°	140	90	140†	90†	140	90	140

*—Below -10°, use 10% kerosene. a—Front axle only. b—Same for front axle. (S)—Summer. (W)—Winter. (EP)—Mild extreme—pressure lube. (Hyp)—Hypoid gear lube. †—Model MH 610—Use Hypoid gear lube.

CAPACITIES

MODEL	LUBRICANT CAPACITY			
	Engine Quarts	Transmission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
DVL-4	4 1/4	4	2	17
LD7	5	5	2 1/2	21
R-3	5	5	2 1/2	21
R-32	5	5	2 1/2	21
R-4	5	5	2 1/2	21
R-5, R-6, V5, V6	5	5	2 1/2	21
Q Series	9	.....	.....	33
MH610	7	12	11	36
MH615	7	8	15	36
MH620	10	9	15	36
MH625	10	12	15	38
MH630	13	12	21	38

b—Front axle, 3 1/4 pt. d—Front axle, 6 1/2 pt.

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
DVL-4	120	17	Pos
LD7 and R & V Series	100	17	Pos
Q Series	120	17	Pos
MH610	166	17	Pos
MH615	166	17	Pos
MH620	120	13	Pos
MH625	120	13	Pos
MH630	120	13	Pos

TENSIONS

MODEL	Cylinder Head (pounds feet)	Main Bearings (pounds feet)	Connecting Rod Bearings (pounds-feet)
DVL-4	60-65	65-70	50-55
LD7 R, Q&V Series	55-60	95-105	45-50
MH610, MH615, MH620, MH625, MH630	.....	.....	.....

See Hercules Specs.

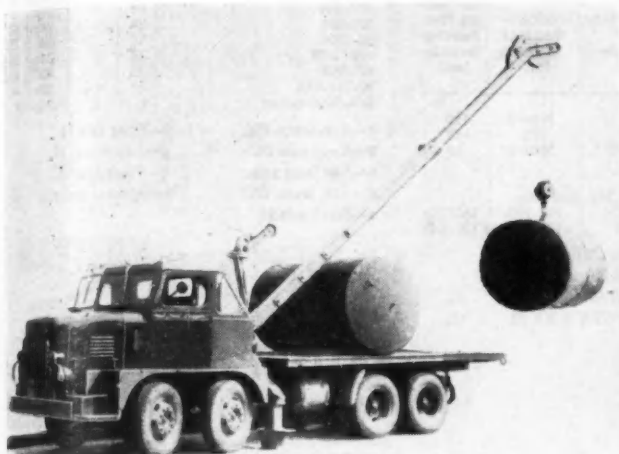
FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
DVL-4	0-1/4	5/8	2	9
LD7	0-1/4	5/8	1-2	8 1/4
R-3, R-32, R-4	0-1/4	0	2 1/2	8 1/4
R-5, R-6, V5, V6	0-1/4	0	1 1/4	8 1/4
Q Series	0-1/4	5/8	9	8 1/4
MH610	1/8-1/4	0-1/4	2 1/2	8 1/4
MH615	1/8-1/4	0	2 1/2	8 1/4
MH620	1/8-1/4	0	2 1/2	8 1/4
MH625	1/8-1/4	0	2 1/2	8 1/4
MH630	1/8-1/4	0	2 1/2	8 1/4

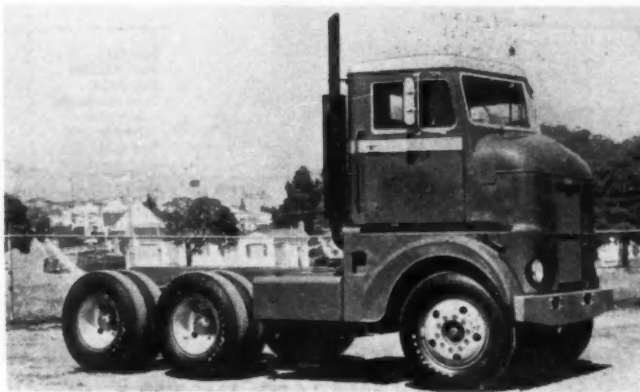
MILFORD

Truck Data

PETERBILT



Models QX, QY



Models 280, 350, 360, 370, 380, 390

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing pages 112-115

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded	SAE Group No.
MILFORD-QX	168	21	Pos	4D
QY	120	17	Pos	4D
PETERBILT-All Models	152*	19	Pos	4D

*-2 Batteries.

TENSIONS

ENGINE MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
MILFORD-QX	73-75	96-100	67-69
QY	130-134	130-134	121-125
PETERBILT-All Models	430-450	310-330	105-115

CAPACITIES

MODEL	Engine Quarts	Transmission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
MILFORD-QX	8	12	9ea	34
QY	10	12	17ea	56
PETERBILT-280	20	18	28	60
350	20	18	14ea	60
360, 370, 380, 390	20	18	20ea	60

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake Tappet Clearance for Valve Timing	Exhaust	Make	Type	Size	Gap				
MILFORD-QX	Wau 6MZA	6-4 1/4 x 4 1/4	40-1500	8°A		.006	.010C	.018C	CH	7 COM	18mm	.025	.018	24°B	115
QY	Wau 140GK	6-4 1/2 x 5 1/2	40-1500	5°A		.010C	.018C	.025	CH	7 COM	18mm	.025	.018	TC	130
PETERBILT-All Models	Cum HB600	6-4 1/2 x 6	55	15°A		.025	.025				Diesel				

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
MILFORD-QX	101	1 1/4	64	2 1/4
QY	86	1 1/4	31	2 1/4
PETERBILT-All Models	55	1 1/4	26	1 1/4
	136	2 1/4	67	2 1/4

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
MILFORD-All Models	0-1/4	1	N1	8
PETERBILT-All Models except as noted	0-1/4	1	1 1/4	8
All 1950 Models with FE 900 Axle	0-1/2	1	3 1/2	5 1/2

N-Negative.

LUBRICATION

MODEL	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	UNI- VERSAL JOINT
MILFORD—All Models.....	40 above 50°	30@30°-50°	20W below 30°	140	90	140	90	140	90	140
PETERBILT—All Models.....	30 above 90°	20@60°-90°	10@10°-60°	140	90	140	90	140	90	140

OSHKOSH



Models W212, W1700, W712, WA906 and WA1600, W2200 Series

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing pages 112-115

TENSIONS

ENGINE MODEL	Cylinder Head (pounds-foot)	Main Bearings (pounds-foot)	Connecting Rod Bearings (pounds-foot)
Her RXC	85	Note 2	115
Her RXLDH	100	175	158
Her JXLD	95	Note 6	52
Cum HRB600, NHRB600	See Cummins		
Bud 6MO-893	Note 4	245-275	150-160
Hall-Scott 400	Note 5	180-200	130-140

Note 2—Front intermed. 123; CTR & RR 105.

Note 4— $\frac{1}{2}$ "-95-105; $\frac{3}{4}$ "-150-160.

Note 5—Large 230-250; small 30-40.

Note 6—Front intermed. 70; CTR & RR 60.

CAPACITIES

MODEL

MODEL	Engine Quarts	Trans-mission Pints	Final Drive Pints	Front Axle Pints	Rear Axle Pints	Cooling System Capacity, Quarts
W-212	8	16a	18h	32	32	1
W-1700	10	24a	25b	46	46	1
W-712	13	24a	15c	46	46	1
WA-906	35	22d	24e	42	42	1
W-2201	24	22d	24e	40	40	1
W-2206	16	29g	24e	75	75	1
WA-2208	35	22d	24e	66	66	1
W-2209	35	29g	24e	32h	32h	1
W-712-6X6	13	24g	40f	86	86	1
WA-1600 Series	1	22d	25c	1	1	1

a—Aux. trans. 6 $\frac{1}{4}$.

b—Front axle 24.

c—Also front axle.

d—Aux. trans. 17.

e—Front axle 25.

f—Front axle 34.

g—Aux. trans. 12.

h—Front axle 15.

i—Optional engines.

BATTERY

MODEL

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded	AABM Group No.	SAE Group No.
All Gasoline Models	153	20	Pos	4H	4H
All Diesel Models	204	25	Pos	7D	7D

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °C B-Before A-After	Spark Occurs Fly-Wheel Teeth B-Before A-After	Wheel Teeth at Cranking Speed
				°C	Flywheel Teeth TC	Intake	Exhaust	Make	Type	Size	Gap				
W-212	Her JXLD	6-4x4 $\frac{1}{2}$	35-1600	5°B		.012	.010	AL	AT-6	14mm	.025	.020			
W-1700	Her RXC	6-4 $\frac{1}{2}$ x5 $\frac{1}{4}$	36-1600	2°A		.010	.010	AL	AT-6	14mm	.025	.020			
W-712	Her RXLDH	6-4 $\frac{1}{2}$ x5 $\frac{1}{4}$	36-1600	2°A		.010	.010	AL	BR-4	18mm	.025	.020			
WA-906	Cum HRB600	6-5 $\frac{1}{2}$ x6		5°B		.014	.022								
W-2201, WA-1600-BG	Cum HRB600	6-5 $\frac{1}{2}$ x6	30-1200	10°B		.010	.015	CH	8 COM	18mm	.027	.018			
WA-1600-CD	Bud 6MO-893	6-4 $\frac{1}{2}$ x6		5°B		.014	.022								
W-2206	Cum HB-600	6-4 $\frac{1}{2}$ x7	55-1600	10°B		.021	.030	CH	A	18 mm	.018	.015			
WA-2208	Hall-Scott 400	6-5 $\frac{1}{2}$ x6		20°B		.014	.027								
W-2209	Cum NHRB-600	6-5 $\frac{1}{2}$ x6													
	NHRBS-600	6-5 $\frac{1}{2}$ x6		55°B		.014	.021								

A—Two per cyl.; exhaust No. 6, intake No. 9.

VALVE SPRINGS

ENGINE MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
Her RXC, RXLDH	102	2 $\frac{1}{2}$	50	2 $\frac{1}{2}$
Her JXLD	58	1.594	43	1.920
Cum HB-600, HRB-600	129-143	2 $\frac{1}{2}$	83-91	2 $\frac{1}{2}$
Cum NHRB-600	104-114	1 $\frac{1}{2}$	74-82	2 $\frac{1}{2}$
Bud 6MO-893	144-155	2 $\frac{1}{2}$	82-88	2 $\frac{1}{2}$
Hall-Scott 400	243	2.000	115	2.485
	243	1.941	115	2.423

O—Outer. I—Inner.

FRONT END

MODEL

MODEL	TOE-IN (inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
W-212, W-1700, W-712, W-7126X6	0- $\frac{1}{8}$	1°	1°	3°
WA-906, WA-1600, W-2201, W-2206, WA-2208, W-2209	0- $\frac{1}{8}$	$\frac{1}{2}$ °	1°	3°

LUBRICATION

ENGINE MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
W-212	40 above 40°	30@10° to 40°	20 below 10°	140A	90A	140Hyp	90Hyp	140A	140A	C
W-1700, W-712, W-712-6X6	40 above 40°	30@10° to 40°	20 below 10°	140A	90A	140A	90A	140A	140A	C
WA-906, WA-1600-CD, WA-2206, W-2209	30 above 60°	20@20° to 80°	10 below 20°	140A	90A	140A	90A	140A	140A	C
W-2200, W-2201, WA-1600-BG	40 above 90°	30@32° to 90°	20 below 32°	140A	90A	140A	90A	140A	140A	C
W-2206	30 above 32°	20 below 32°		140A	90A	140A	90A	140A	140A	C

A—Straight mineral oil gear lubricant; same for front axle, aux. trans & transfer case.

C—Light weight chassis lubricant.

Hyp—Hypoid gear lubricant front and rear axles, W-212 only.

CAPACITIES

MODEL	LUBRICANT CAPACITY				Cooling System Capacity, Quarts
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Axle Pints	
F-20	8	8	15	20	20
F-21	8	8	15	21	21
F-22	11	11	20	22	22
F-22R	11	11	23	22	22
F-22S	11	11	31	22	22
F-23	20	20	31	25	25
F-226	11	11	19ea	22	22
F-236	20	20	14ea	25	25

Truck Data

REO



BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded	AABM Group No.
F-20, F-21, F-22, F-22R, F-22S	136	17	Pos	3
F-226	153	19	Pos	4
F-23, F-236				

TENSIONS

MODEL	Cylinder Head (pounds-foot)	Main Bearings (pounds-foot)	Connecting Rod Bearings (pounds-foot)
F-20, F-21, F-22, F-22R, F-22S, F-226	100-105	85-90	65-70
F-23, F-236	130-140	100-110	100-110

Series F-20, F-21, F-22, F-22R, F-22S, F-23, F-226, F-236

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing pages 112-115

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs "TC" B-Before A-After	Spark Occurs Fly-Wheel Teeth "TC" B-Before A-After	Comp. Pressure at Cranking Speed
				"TC"	Flywheel Teeth TC	Intake Tappet Clearance for Valve Timing	Exhaust	Make	Type	Size	Gap				
F-20, F-21	Own OA255	6-3 1/2 x 4 1/4	45-60 Gov.	5°B		.019	.015	CH	J-6	14mm	.025	.022	8°B	B	110
F-22	Own OA292	6-3 1/2 x 4 1/4	45-60 Gov.	5°B		.019	.015	CH	J-6	14mm	.025	.022	4°B	B	120
F-22R, F-22S, F-226	Own OA331	6-4 1/2 x 4 1/4	45-60 Gov.	5°B		.019	.015	CH	J-6	14mm	.025	.022	2°B	B	120
F-23, F-236	Cont T-6-427	6-4 1/2 x 4 1/4	45-60 Gov.	16°B		.022	.017	CH	8COM	18mm	.030	A	10°B		120

A—.018 to .024

B—Mark on vibration damper front end of crankshaft lines up with pointer on timing gear cover

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
F-20, F-21, F-22, F-22R, F-22S, F-226	154	1 1/2	62	1 1/4
F-23, F-236	129	1 1/2	56	1 1/4

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
F-20, F-21, F-22, F-22R	0-3/8	1	2	8°
F-22S, F-23, F-226, F-236	0-3/8	1	1 1/2	8 1/2°

LUBRICATION

MODEL	ENGINE		TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range		Summer	Winter	Summer	Winter	Summer	Winter	
F-20, F-21, F-22, F-22R, F-22S, F-226	30 above 32°	20W above 10°	10W below 10°	HDEO	HDEO	140	90	90	90
F-23, F-236	30 above 50°	20 above 32°	10 below 20°	HDEO	HDEO	140	90	90	90

HDEO—Heavy Duty Gear Lubricant.

STERLING

Series DD, HBS, HC, HCS, HD, HDS, HWS

VALVE SPRINGS, TENSIONS See pages 112-115.

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K.P. SLANT (in degrees)
HA1101	$\frac{1}{4} \pm \frac{1}{16}$	1	Var	8
TB1301T, TB1301TD, TB1501T, TB1501TD, TA1501TD, TA1511TD, TA1601D, TA1611D, HA1401, HA1601, HA1701, HB2001, HB2001D, HA1605, HA1805, HB2205, TA2105D, TA2115D, HA1502, HA1802, HA1803, HA1813, HB2002, HB2002D, HB2003, HB2003D, HB2013, HB2013D, HB2516, HB2516D, GC10 HB2755, HB2755D, HA2805D, HB2053D, HB2756, HB2756D, HB3006D, HB3506D, CC20 HA4506D SF6506D, SF7506D HB1204, HA1304, HB1604, HB1904, HB1904D, HB2254, HB2254D	$\frac{3}{4} \pm \frac{1}{16}$	1	Var	$5\frac{1}{2}$
	$\frac{3}{4} \pm \frac{1}{16}$	1	Var	8
	$\frac{3}{4} \pm \frac{1}{16}$	1	Var	0
	$\frac{3}{4} \pm \frac{1}{16}$	1	Var	0
	$\frac{1}{2} \pm \frac{1}{16}$	0	Var	0

b—Capacities given include lubricant in standard auxiliary transmission.

c—Capacities given include lubricant in standard transfer case.

d—Capacities given are for both axles of tandem axle unit.

f—Rear axle capacities for chain drive chassis are capacities of standard jackshaft unit.

g—Rear axle capacities for Multi-Drive vehicles include lubricant furnished in front driving axle.

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °C B-Before A-After	Spark Occurs Flywheel Teeth B-Before A-After	Comp. Pressure at Cranking Speed
				°C	Flywheel Teeth TC		(Cold) Intake	(Cold) Exhaust	Make	Type	Size	Gap				
HA1101, HA1401, HA1605, HA1805, HA1502, HB1204, CC10.	Wau 6MZA	6-4 $\frac{1}{2}$ x4 $\frac{9}{16}$	40-3000	8°B	3B	.008	.008-.010	.018-.020	AL	BT4	18mm	.025	.018	Var	.....	110
HA1801, HA1701, HA1802, HA1803, HA1813, HA1304	Wau 6SRKR	6-4 $\frac{5}{8}$ x5 $\frac{1}{8}$	40-2250	8°A	3A	.004	.008-.010	.024-.026	AL	TT8	7 $\frac{1}{2}$	.025	.018	Var	.....	90
HB2205, HB2516, HB1604, CC20.	Wau 14QKG	6-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	40-2250	15°B	5B	.010	.012-.014	.018-.020	AL	AT4	18mm	.025	.018	Var	.....	.....
TB1301T, HB2001, HB2755, HB2002, HB2003, HB2013, HB2756	Wau 14GKGB	6-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	40-2600	15°B	5B	.010	.012-.014	.024-.026	AL	AT4	18mm	.025	.018	Var	.....	.....
TB1501T	Wau 14QGBZ	6-4 $\frac{5}{8}$ x5 $\frac{1}{2}$	40-2300	15°B	5B	.010	.012-.014	.024-.026	AL	AT4	18mm	.025	.018	Var	.....	.....
HB1904	Wau 14SGK	6-5 $\frac{1}{8}$ x6	40-2000	15°B	6B	.010	.012-.014	.023-.025	AL	AT4	18mm	.025	.018	Var	.....	.....
HB2254	Wau 14SGKB	6-5 $\frac{1}{4}$ x6	40-2100	15°B	6B	.010	.012-.014	.023-.025	AL	AT4	18mm	.025	.018	Var	.....	.....
TB1301TD, HB2001D, HB2755D, HB2002D, HB2003D, HB2516D, HB2756D, HB3006D, HB3506D, HB1904D	Cum HB600, HBD600	6-4 $\frac{7}{8}$ x6	30-40 1800	5°B	.....	.....	.014	.022	.....	Diesel	.....	.....	.....	.....	.....	525
TB1501TD, TA1501TD, TA1511TD, TA1601D, TA1611D, HA2605D, TA2105D, TA2115D, HA4506D, HB2254D	Cum NHB600, NHBDB600	6-5 $\frac{1}{8}$ x6	40-2100	20°B	.....	.....	.014	.027	.....	Diesel	.....	.....	.....	.....	.....	525
SF6506D	Buda 8DA1125	8-5 $\frac{1}{8}$ x6 $\frac{1}{2}$	30-1200	20°B	.....	.....	.015	.015	.....	Diesel	.....	.....	.....	.....	.....	.....
SF7506D	Buda 8DAS1125	8-5 $\frac{1}{8}$ x6 $\frac{1}{2}$	30-1200	45°B	.....	.010	.015	.015	.....	Diesel	.....	.....	.....	.....	.....	.....

LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
TB1301T	40 @ 50-70F	30 @ 30-50F	20W @ 10-30F	140	90	140 Hyp(1)	90 Hyp	140EP	140EP	140
TB1301TD	20 @ 20-80F	10 Below 10F		140	90	140 Hyp(1)	90 Hyp	140EP	140EP	140
TB1501T	40 @ 50-70F	30 @ 30-50F	20W @ 10-30F	140	90	140 Hyp(1)	90 Hyp	140EP	140EP	140
TB1501TD, TA1501TD, TA1511TD, TA1601D, TA1611D	20 @ 20-80F	10 Below 10F		140	90	140 Hyp(1)	90 Hyp	140EP	140EP	140
HA1101, HA1401, HA1601, HA1701, HB2001	40 @ 50-70F	30 @ 30-50F	30W @ 10-30F	140	90	140	90	140EP	140EP	140
HB2001D	20 @ 20-80F	10 Below 10F		140	90	140	90	140EP	140EP	140
HA1605, HA1805, HB2205, HB2755, HB2755D, HA2605D, TA2105D, TA2115D	40 @ 50-70F	30 @ 30-50F	20W @ 10-30F	140	90	140	90	140EP	140EP	140
HA1502, HA1802, HA1803, HA1813, HB2003, HB2013	20 @ 20-80F	10 Below 10F		140	90	140	90	140EP	140EP	140
HB2002D, HB2003D, HB2013D, HB2503D	40 @ 50-70F	30 @ 30-50F	20W @ 10-30F	140	90	140 (2)	90	140EP	140EP	140
HB2518, HB2756	20 @ 20-80F	10 Below 10F		140	90	140 (2)	90	140EP	140EP	140
HB2756D, HB2756, HB3006D, HB3506D, HB4506D	40 @ 50-70F	30 @ 30-50F	20W @ 10-30F	140	90	140 (2, 3)	90	140EP	140EP	140
SP6506D, SF7506D	20 @ 20-80F	10 Below 10F		140	90	140 (2, 3)	90	140EP	140EP	140
HB1204, HA1304, HB1604, HB1904, HB2254	40 @ Above 90F	30 @ 32-90F	20 @ 10-32F	140	90	140 (2, 3)	90	140EP	140EP	140
HB1904D, HB2254D	40 @ 50-70F	30 @ 30-50F	20W @ 10-30F	140	90	140 (4)	90	140EP	140EP	140
CC10, CC20	20 @ 20-80F	10 Below 10F		140	90	140 (4)	90	140EP	140EP	140
	40 @ 50-70F	30 @ 30-50F	20W @ 10-30F	140	90	140	90	140EP	140EP	140

NOTES: (1) Hyp—Hypoid. (2) Rear axle recommendations for chain drive chassis refer to jackshaft unit lubrication.

(3) Lubricant for drive end of jackshaft units of dual chain drive chassis is SAE 50 Summer and Winter.

(4) Covers front driving axle of Multi-Drive chassis also.

CAPACITIES

CAPACITIES	LUBRICANT CAPACITY				Cooling System Capacity, Quarts
	Engine Quarts	Transmission/Pumps	Rear Axle	Front Axle/Pumps	
2R6	5	2 1/2	3	3	10 1/2
2R6	2 1/2	2 1/2	3	3	15 1/2
2R10	5	2 1/2	3	3	10 1/2
2R11	5	2 1/2	3	3	15 1/2
2R14	6	6	6 1/2	6 1/2	15 1/2
2R16	5	6	6 1/2	6 1/2	10 1/2
2R16A, 2R16B	6	6 1/2	7 1/2	7 1/2	15 1/2
2R17A, 2R17B	6	6 1/2	18 1/2	18 1/2	15 1/2

- With overdrive—3 pt., with 4-speed trans.—6 pt.
- With H.D. single speed—18½ pt., with 2-speed—14 pt.
- With 2-speed—14 pt.
- 13½ qt. optional.
- 16 qt. optional.
- With H.D. trans.—6¾ pt.

BATTERY

BATTERY	Amp. Hr. Capacity	Number of Plates	Terminal Grounded	SAE Group No.	AABM Group No.
MODEL					
All Models—Std.	100	15	Pos	1M	1
All Models—Ont.	153	19		4H	4

TENSIONS

ENGINE MODEL	Cylinder Head (pounds feet)	Main Bearings (pounds feet)	Connecting Rod Bearings (pounds- feet)
2R5, 2R10, 2R15, 2R6, 2R11, 2R14, 2R16A, 2R16B, 2R17A, 2R17B	45-50	68-93	28-32
	80-85	68-93	52-54

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap				
2R5, 2R10.....	Own 1R	6-3x4	40-2000	15°B	5B	.020	.016C	.016C	CH	J7	14mm	.025	.020	2°B	3/4B	120
2R6, 2R11, 2R14.....	Own 6R	6-3 1/4 x 4 1/4	40-2000	15°B	5 1/2 B	.020	.016C	.016C	CH	J7	14mm	.025	.022	2°B	3/4B	120
2R15.....	Own 2R	6-3x4	40-2000	15°B	5B	.020	.016C	.016C	CH	J7	14mm	.025	.020	2°B	3/4B	120
2R16A, 2R16B, 2R17A, 2R17B.....	Own 4R	6-3 1/4 x 4 1/4	40-2000	15°B	5 1/2 B	.020	.016C	.016C	CH	J7	14mm	.025	.022	2°B	3/4B	120

C-Cold.

VALVE SPRINGS

VALVE SPRINGS	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length—Inches	Pressure (Ave.) Pounds	Length—Inches
MODEL				
2R6, 2R10, 2R15.....	77-85	1 $\frac{1}{8}$	37-41	1 $\frac{3}{4}$
2R6, 2R11, 2R14, 2R16A, 2R16B, 2R17A, 2R17B (A).....	125-135	1 $\frac{3}{4}$	54-60	2 $\frac{3}{4}$

A—Exhaust Rotavalve Spring: Free length 2 $\frac{1}{8}$ ".
Length under load 1 $\frac{3}{4}$ ". 120—130lb.

FRONT END

MODEL	TOE-IN (In inches)	CAMBER (In degree)	CASTER (In degree)	K. P. SLANT (In degree)
2R5, 2R6, 2R10, 2R11.....	$\frac{1}{8}$ - $\frac{1}{2}$	1	$1\frac{1}{4}$ - $1\frac{1}{2}$	7 $\frac{1}{2}$
2R14, 2R15.....	$\frac{1}{8}$ - $\frac{1}{2}$	1	$1\frac{1}{4}$ - $2\frac{1}{4}$	8
2R16A, 2R16B, 2R17A, 2R17B.....	$\frac{1}{8}$ - $\frac{1}{2}$	1	2 - $2\frac{1}{2}$	8

LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
2R6, 2R6	30 above 32°	20 @ 10° to 32°	10 below 10°	90g	90g	90Hyp	90Hyp	140	140	K
2R10, 2R11	30 above 32°	20 @ 10° to 32°	10 below 10°	90g	90g	140	90h	140	140	K
2R14, 2R15	30 above 32°	20 @ 10° to 32°	10 below 10°	140	90h	140	90h	140	140	K
2R16A, 2R16B (L)	30 above 32°	20 @ 10° to 32°	10 below 10°	140	90h	140	90h	140	140	K
2R17A, 2R17B (M)	30 above 32°	20 @ 10° to 32°	10 below 10°	140	90h	140Hyp	90Hyp	140	140	K

8-If equipped with overdrive use 90 mineral gear lube or 40 engine oil.

h—Below 32° only.

Hyp—Truck type hypoid lube.

K—Chassis lube—low pressure gun.

L—H.D. single speed (Opt.) and 2-speed rear axle (Opt.) 90 hyp. below 32° and 140 hyp. above 32°.

M-2-speed rear axle (optional) 90 hyp. below 32° and 140 hyp. above 32°

WALTER



Models FGB, FGR, FC, FCK, FKM, FN, FZM

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing pages 112-115

CAPACITIES

MODEL	LUBRICANT CAPACITY				Cooling System Capacity, Quarts
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Axle Pints	
FGB, FGR (1943-52)	18	32	8	8	86
FC, FCK (1936-52)	10	25	8	8	86
FKM (1936-52)	10	17	8	8	86
FM-FZM (1936-52)	8	17	8	8	86

BATTERY

MODEL	Amp Hr Capacity	Number of Plates	Terminal Grounded Pairs	Terminal Group No.
FN, FZM (1943-52)	160	17	Pos	37
FC, FCK, FKM (12 Volts), (1943-52)	120	15	Pos	18
FGB, FGR (12 Volts), (1943-52)	160	17	Pos	48

TENSIONS

MODEL	Cylinder Head (pounds feet)	Main Bearings (pounds feet)	Connecting Rod Bearings (pounds feet)
FN, FZM	73-75	98-100	87-88
FKM, FCK, FC, FGR	73-75	129-133	121-125
FGB, FGR	130-134	242-250	73-78

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °C B-Before A-After	Spark Occurs Fly Wheel Teeth °C B-Before A-After	Comp. Pressure at Cranking Speed
				°C	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap				
FN, FZM (1943-52)	Wau MZR	6-4 1/2 x 4 1/2	40-1500	8°A	3A	.004	.008-10C	.014-16C	Opt	.....	18mm	.025	.018	Var	.....	88
FKM, FCK, FC, FGR (1943-52)	Wau SRKH	3-5 1/2 x 5 1/2	40-1500	8°A	3A	.004	.008-10C	.014-16C	Opt	.....	3/4	.025	.018	Var	.....	90
FGB, FGR (1943-52)	Wau 145GK	6-5 1/2 x 6	40-1500	5°A	2A	.006	.009-11C	.024-26C	Opt	.....	18mm	.025	.018	Var	.....	120

C—Cold.

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
FN, FZM	101	1 1/2	64	2 1/2
FKM, FC, FCK, FGR	94	2 1/2	59	2 1/2
FGB, FGR	158	2 1/2	67	2 1/2
	100	2 1/2	42	2 1/2

I—Inner. O—Outer.

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. BLANT (in degrees)
FN, FKM, FZM, FCK, FC, FGB, FGR (1936-52)	N 1/2	1 1/2	5	2

N—Negative.

LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
All models (1936-52)	(S) 50	(W) 30	.....	250	140	250	140	140	140	90

(S) Summer (W) Winter

CAPACITIES

MODEL	LUBRICANT CAPACITY				Cooling System Capacity, Quarts
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Axle Pints	
D-1	8a	16c	31e	36	36
D-3, D-3S	14b	24c	38ef	60	60
D-5	20	24d	38e	56	56
D-5N, D-5R, D-5RB	28	24d	38e	56	56

1-Add 2 qts. for heater.
2-Add 1 qt. for filter.
3-Add 4 qts. for filter.
4-Models with tandem axles, aux. trans.—13 pts.
5-Models with tandem axles, aux. trans.—12 pts.
6-Other models ending in T2, T4, T7, T8, use 14, 17, 20 and 26 pts. in each axle respectively.
7-Other models ending in F, G, and H, use 38, 34 and 31 pts. in each axle respectively.

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
All Gasoline Models	152*	19	Pos
All Diesel Models	152**	19	Pos

*-2 Batteries. **-4 Batteries.

TENSIONS

MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
All Models	See Engines, Pages 112-115		

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake	Exhaust	Make	Type	Size	Gap				
D1, D1C	Con T-6427	6-4 1/2 x 4 1/2	40-60	16°B	.....	.022	.017	CH	.....	.....	.025	.....	.....	.....	120
D3	Con R-6572	6-4 1/2 x 5 1/2	50-60	12°B	.....	.0245	.020	CH	.....	.....	.025	.020	5B	.....	120
D3S	Con R-6602	6-4 1/2 x 5 1/2	50-60	12°B	.....	.0245	.020	CH	.....	.....	.025	.020	5B	.....	120
D5	Cum HB600	6-4 1/2 x 6	30-50	5°B	.....	.....	.014	.....	.....	Diesee	.....	.....	.....	.....	.....
D5N	Cum NHB-600	6-5 1/2 x 6	30-50	20°B	.....	.....	.014	.....	.....	Diesee	.....	.....	.....	.....	.....
D5R	Cum HRB-600	6-5 1/2 x 6	.....	5°B	.....	.....	.014	.....	.....	Diesee	.....	.....	.....	.....	.....
D5RB	Cum HRBB	6-5 1/2 x 6	77°B	.....	.....	.....	.016	.....	.....	Diesee	.....	.....	.....	.....	.....

VALVE SPRINGS

ENGINE MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
Con T-6427	57	1.468	12.8	1 1/4
Con R6572, R6602	129	1 1/4	71	2 3/4
Cum HB600, HRB-600, HBS-600	85	1 1/4	35	2 3/4
Cum NHB600	166	2 1/2	70	2 3/4
	129	2 1/2	63	2 3/4
	143	1 1/2	91	2 3/4
	104	1 1/2	74	2 3/4
	114	.....	82	.....

I-Inner. O-Outer.

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
All Models	1/4-1/2	1/4-1/2	1/2-1 1/2	8

LUBRICATION

MODEL	ENGINE		TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range		Summer	Winter	Summer	Winter	Summer	Winter	
All Gasoline Models	(S) 40	(W) 20 or 10	140	90	140	90	140	140	.....
All Diesel Models	30 at 80°-100°	20 at 20°-80°	140	90	140	90	140	140	.....

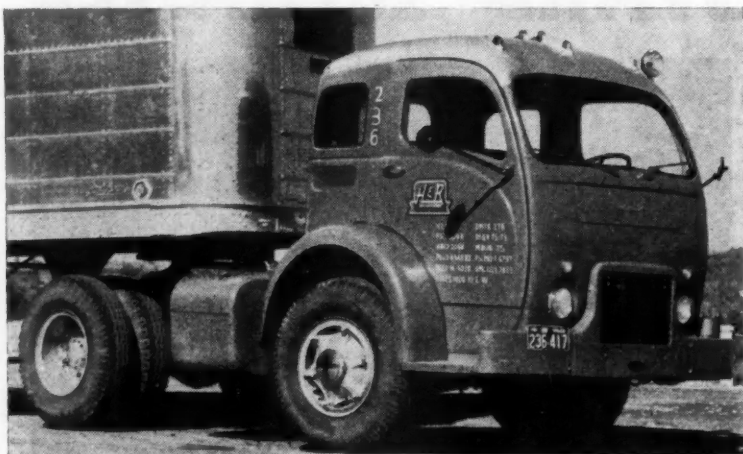
Truck Data
WARD LaFRANCE



Series D-1, D-1C, D-3, D3H, D3S, D3SH, D-5, D5N, D5R, D5RB

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing pages 112-115

WHITE



Series WC16, WC20, WC22, WC26, WC28, WC32
& Models 3016, 3020, 3022, 3022PLT, 3026

See also Sterling—p. 98
White Freightliner—p. 81

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing pages 112-115

CAPACITIES

MODEL	LUBRICANT CAPACITY				
	Engine Quarts	Trans- mission Pints	Rear Axle Pints	Front Axle Pints	Greasing System Capacity, Quarts
WC16-16B...	12	8	22	22	30
WC16T...	12	13	22	22	30
16B...	12	13	11	11	30
WC20, WC20B, WC20T...	12	13	11	11	30
WC22, WC22T, 26, 26T...	12	19	22	22	30
WC-22PLT...	12	19	8	8	30
WC28, WC28T, WC32...	16	24	22	22	30
WC2264...	12	18	22	22	30
WC2864...	16	24	14	14	30
WC3264...	16	24	28	28	30
3016...	10	6	22	22	28
3016T...	10	13	22	22	28
3018...	10	11	11	11	28
3018T, 3020, 3020T...	10	13	11	11	28
3022, 3022T, 3026...	10	19	22	22	28
3022PLT...	10	18	8	8	28

ea—Each.

BATTERY

MODEL	Amp Hr Capacity	Number of Plates	Terminal Grounded	Terminal Voltage	Group No
WC16, WC16T, WC20, WC20T, WC22, WC22T, WC22PLT, WC28, WC28T, WC2864, 3016, 3016T, 3020, 3020T, 3022, 3022T, 3022PLT, 3026...	119	15	Pos	24	24
WC18B, WC20B, WC16B...	138	17	Pos	24	24
WC28, WC32, WC2864, WC3264...	119*	15	Pos	24	24
WC28T...	138*	17	Pos	24	24

*—2 Batteries.

TENSIONS

ENGINE MODEL	Cylinder Head (pounds-foot)	Main Bearings (pounds-foot)	Connecting Rod Bearings (pounds-foot)
116A, 120A, 130A, 140A, 150A...	85-90	70-75	48-52
260A, 280A...	105-115	70-75	70-75

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs "TC B-Before A-After"	Spark Occurs Flywheel Teeth "TC B-Before A-After"	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap				
WC16, WC16B, 3016...	Own 116A	6-3 1/2 x 4 1/2	35 Max	15°B	.....	0	0	0	Ch	J6	14mm	.025	D	7°B	.....	.....
WC16T, WC16, 3016T...	Own 120A	6-3 1/2 x 4 1/2	35 Max	15°B	.....	0	0	0	Ch	J6	14mm	.025	DD	6°B	.....	.....
WC20, WC20B, 3020...	Own 130A	6-4 x 4 1/2	35 Max	15°B	.....	0	0	0	Ch	J6	14mm	.025	D	6°B	.....	.....
WC20T, WC22, 3020T, 3022...	Own 140A	6-3 1/2 x 5 1/2	35 Max	15°B	.....	0	0	0	Ch	J6	14mm	.025	D	7°B	.....	.....
WC22T, WC26, WC26T, 3022T, 3026, WC2264, WC22PLT, 3022PLT...	Own 150A	6-4 x 5 1/2	35 Max	15°B	.....	0	0	0	Ch	J6	14mm	.025	F	3°B	.....	.....
WC28...	Own 260A	6-4 1/2 x 5	45 Max	15°B	.....	0	0	0	Ch	6 COM	18mm	.025	F	9°B	.....	.....
WC28T, WC32, WC2864, WC3264...	Own 280A	6-4 1/2 x 5	45 Max	15°B	.....	0	0	0	Ch	6 COM	18mm	.025	F	8°B	.....	.....

D—.017 to .018. E—.018 to .024.

VALVE SPRINGS

ENGINE MODEL	VALVE SPRINGS			
	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
116A, 120A, 130A, 140A, 150A...	99-107	2 1/2	Free	3.0
260A, 280A...	74-81	1.827	Free	2 1/2
O—Outer. I—Inner.	109-117	1.827	Free	2 1/2

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
WC16, WC16T, WC18B, WC16B...	3/4	1°	2°-50'	8°
WC22, WC22T, WC26, WC26T, WC28, WC28T, WC20, WC20B, WC20T, WC22PLT, WC32, WC2264, WC2864, WC3264...	3/4	1°	2°-50'	8°30'
3016, 3020, 3016T, 3020T, 3022, 3022T, 3022PLT, 3026...	3/4	1°	2°-30'	8°

LUBRICATION

MODEL	ENGINE		TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range		Summer	Winter	Summer	Winter	Summer	Winter	
WC16, WC16B, WC16T, 3016, 3016T...	(S)30	(W)20	90	90	140EP	90EP	ST	ST	140
All other Models...	(S)30	(W)20	90	90	140EP	90EP	ST	ST	140

Note: EP—Extreme pressure lubricant. (S)—Summer. (W)—Winter. ST—Steering gear lubricant.

CROSLEY

Truck Data

WILLYS



Pick Up, Panel Delivery



Models CJ-3A, 4WD, 473 Series

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded	SAE Group No.
WILLYS All Models.....	100	15	Neg	IM
CROSLEY All Models.....	65	11	Pos	1

TENSIONS

MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
WILLYS All Models.....	60-70	65-70	35-40
CROSLEY All Models.....	None	12.5-15	16.5-23

CAPACITIES

MODEL	Engine Quarts	Transmission Pints	Rear Axle Pints	Cooling System Capacity Quarts
WILLYS CJ-3A.....	4	3*	2**	11
4WD2X473SD.....	4	3*	2**	11
473 Series.....	4	1 1/2	2	11
CROSLEY All Models.....	2	1	1 1/2	4

*—Transfer case, 3 1/2 pts.
**—Front axle, 2 1/4 pts.

TUNE UP

TUNE UP	MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Valve Closes B-Before A-After	Intake Tapet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Flywheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
					°TC	Flywheel Teeth TO			Intake	Exhaust	Make	Type	Size	Gap				
WILLYS		Own L Own F	4-3½x4½ 4-3½x4½	35-30 35-30	9°B 9°B	3.19B 3.19B	.020 .020	.016C .018C	.016C .012C	AL* AL*	AN-7* AN-7*	14mm 14mm	.030 .030	.020 .020	5°B TC	18B TC	118 135	
CROSLEY																		
All Models		Own	4-2½x2½	40-30	5°B	1	.004-6	.004-6C	.007-9C	CH†	J-8†	14mm	.025	.020	12B	3B	130	
*—Old Champion J-8.		C—Cold.		†—OR AL-AN-7E.														

*—OR Champion J-8.

C—Cold.

†—OR AL-AN-7E.

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
WILLYS CJ-3A Intake.....	120	1 1/4	53	2 1/4
4WD, 473 Series Intake.....	153	1 1/4	73	1 1/4
2X473, 473SD-Intake.....	153	1 1/4	73	1 1/4
All Models—Exhaust.....	120	1 1/4	53	2 1/4
CROSLEY Intake.....	91 max.	1 1/4	44.8 max.	1 1/4

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
WILLYS CJ-3A, 4WD.....	1/8 to 1/4	1 1/4	3	7 1/2
473SD.....	1/8 to 1/4	1 1/4	1	5
2X473SD.....	1/8 to 1/4	1	5	7 1/2
CROSLEY All Models.....	1/8	2	7 1/2	6 1/2

LUBRICATION

LUBRICATION	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNI- VERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
MODEL										
WILLYS All Models.....	30 above 90°	20@32° to 90°	20W@10° to 32°*	90A	80A	90B	90B	140	140	C
CROSLEY All Models.....	30 above 65°	20@10° to 65°	10 @ 10° to -10°	90	90	90	90	90	90	.....
*—10W @ -10° to 10°, 10% kerosene below -10° A—Same for transfer case or overdrive. B—Same for front axles on 4WD models. C—Front axle shaft U-joint: fibre grease or NLGI #0 winter, NLGI #1 summer. Propeller shaft U-joint: NLGI #0 winter, NLGI #1 summer. Rear prop. shaft on 4WD lubricated for life.										

*—10W @ -10° to 10°, 10% kerosene below -10°
A—Same for transfer case or overdrive.
B—Same for front axles on 4WD models.

C—Front axle shaft U-joint: fibre grease or NLGI #0 winter, NLGI #1 summer. Propeller shaft U-joint: NLGI #0 winter, NLGI #1 summer. Rear prop. shaft on 4WD lubricated for life.

ACF-BRILL



Models C-27, C-31, SU-37, IC-41A, C-44, C-48

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing pages 112-115

CAPACITIES

MODEL	LUBRICANT CAPACITY				
	Engine Quarts	Trans-mission Pints	Rear Axle Pints	Front Axle Pints	Cooling System Capacity, Quarts
IC-41A (H-S 190-5)	28	20	28	28	28
C-27, C-31 SU-37	10	9	13	13	13
C-44*, C-48*	20	14	28	28	28
IC-41A (Opt. Cummins Diesel)	40	20	28	28	28

*—Torque converter.

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Voltage	AA/AM Group No.
All Models	160	17	Pos. 48	

TENSIONS

ENGINE MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
HS, 190-3, 190-3, 190-5	S30-40 L230-250	180-200	130-140
IHC RD372, RD406, RD450	100-110	100-110	75-85
NHHD-600	430-480	See Page 112	

S—Small. L—Long.

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)			SPARK PLUG				Breaker Point Gap	Spark Occurs Flywheel Teeth B-Before A-After	Spark Occurs Flywheel Teeth B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake Tappet Clearance for Valve Timing	Intake	Exhaust	Make	Type	Size	Gap				
C-44	HS 180-1	6-5x6	60-2200	7°B	1"	.022	.022C	.022C	CH	6 COM	18mm	.020	.022	12B	.....	118
C-44, C-48, IC-41-A	HS-190-2	6-5½x6	60-2200	7°B	1"	.022	.022C	.022C	CH	6 COM	18mm	.020	.022	12B	.....	114
C-27	IHC RD372	6-4½x4½	40-45 @ 1500	8°B	.....	.023	.020	.020	CH	J-6	14mm	.030	.022	5B	.....	116
C-31	IHC RD406	6-4½x4½	40-45 @ 1500	8°B	.....	.023	.020	.020	CH	J-6	14mm	.030	.022	5B	.....	120
C-31, SU-37	IHC RD450	6-4½x5	40-45 @ 1500	8°B	.....	.023	.020	.020	CH	J-6	14mm	.030	.022	5B	.....	122
IC-41A (Optional)	Cum NHHB 600	6-5½x6	30-50 @ 2100	20°B	.....	.014	.027	.....	.....	.....	Diesel	.....	.....	.....	.....	525

HS—Hall-Scott. *—100-105. C—Cold.

VALVE SPRINGS

MODEL	VALVE SPRINGS			
	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
C-44 (HS 180-1)	O. 243	2,000	115	2 485
C-44, C-48, IC41A, HS 190-3, 190-5	I. 243	1,941	115	2 423
C-27 (IHC RD372)	O. 137	1,706	.....	2 ½
C-31 SU-37 (IHC RD-150)	I. 855	1,503	.....	2 ½
(IHC RD406, RD450)	I. 109	1,843	78	2.25
IC41A (Cum. NHHB-600)	.....	.....	.....	.....

O—Outer. I—Inner.

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
C-44, C-48	¾	1	2¼	5¼
C-27, C-31, SU37	0-½	1	1¼	5¼
IC41A	¾	1	1¼	5¼

LUBRICATION

MODEL	ENGINE		TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range		Summer	Winter	Summer	Winter	Summer	Winter	
C-44, C-48 (HS 180-3, 190-3) IC 41A (HS-190-5)	a 32° to 90°	20 @ 32° to -10°	50c	50c	140	90	90	90	140
C-27, C-31, SU-37	b 32° to 90°	20 @ 32° to 10°	50	50	140	90	90	90	140
IC-41A (Cum. NHHB600)	30 @ 90° & Above	30 @ 20° to 80°	50	50	140	90	90	90	140

a—SAE 30 light service, SAE 40 heavy service.

b—SAE 40 light service, SAE 50 heavy service.

c—For torque converters, use approved fluid.

AEROCOACH

Bus Data

BEAVER



Models 373-MC, MH, MD



Models B35PT, B31PT, B27PT

BATTERY

MODEL	Amp Hr Capacity	Number of Plates	Terminal Grounded	AABM Group No.
AEROCOACH 373-MC, 373-MH	165	21	Pos	4B
373-MD*	165	21	Pos	4B
BEAVER All Models	158	17	Pos	4B

*—2 Batteries.

TENSIONS

MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
AEROCOACH 373-MC	110		
373-MH	110-175		
373-MD	175	175	156
BEAVER IHC 450, 406, 372	110	105	80
IHC 269	80	105	80

CAPACITIES

MODEL	Engine Quarts	Transmission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
AEROCOACH 373-MC	12	20	12	88
373-MH	11	20	12	88
373-MD	14	20	12	88
BEAVER IHC 450	12	6	23	80
IHC 406, 372	12	6	23	80
IHC 269	8	6	20	50

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Brake Point Gap	Spark Occurs °C B-Before A-After	Spark Occurs Fly-Wheel Teeth °C B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake	Exhaust	Make	Type	Size	Gap				
AEROCOACH 373-MC	Con U6501	6-4 1/2 x 5 1/4	40-50	17°B		.022	.020	AC	82	18mm	.025	.021	5°B TC		120
373-MH	IHC RD450	6-4 1/2 x 5	40-1500	8°B		.023	.018	AC	43	14mm	.030	.021	TC		122
373-MD	Her DRXC	6-4 1/2 x 5 1/4	30-1200	12°B		.016	.016								
BEAVER B35PT	IHC 450	6-4 1/2 x 5	40-2800	8°		.023	F	AC	43	14mm	E	D	TC		122
B31PT	IHC 372	6-4 1/2 x 4 1/2	40-2700	8°		.023	F	AC	43	14mm	E	D	TC		122
B31PT	IHC 401	6-4 1/2 x 4 1/2	40-2700	8°		.023	F	AC	43	14mm	E	D	TC		122
B27PT	IHC 269	6-3 1/2 x 4 1/2	40-2800	8°		.023	F	AC	43	14mm	E	D	3°B		116

F—.018-.020.

E—.028-.032.

D—.018-.024.

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
AEROCOACH All Models		See engl nes page		112-115
BEAVER B35PT, B31PT	222		92	
B27PT	116		69	

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
AEROCOACH 373-MC, 373-MH, 373-MD	1/4	1°	1 1/2°	8°
BEAVER All Models	1/4	1°	0 to 2°	5 1/2°

LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
AEROCOACH 373-MC	(S)40	(W)30		50	50	160	90	250	160	140
373-MH	(S)50	(W)40		50	50	160	90	250	160	140
373-MD		Follow Visco meter		50	50	160	90	250	160	140
BEAVER B35PT, B31PT	(S)50	(W)40		140	90	140GP	90GP	140	90	90
B27PT	(S)40	(W)30		140	90	140GP	90GP	140	90	90

(S)—Summer.

(W)—Winter.

GP—General purpose gear lubricant.

BECK

KALAMAZOO



Silverliner, Beck 29, Mainliner



Model Cruiser

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing pages 112-115

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
BECK (All Models)	145*	27	Pos
Kalamazoo Cruiser	17	17	Pos

*—2 batteries.

TENSIONS

MODEL	Cylinder Head (pounds-foot)	Main Bearings (pounds-foot)	Connecting Rod Bearings (pounds-foot)
BECK	See engine	pages 112-110	115
IHC 269	75-85	100-110	60-70

CAPACITIES

MODEL	Engine Quarts	Trans-mission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
BECK Silverliner	28	24	31	96
29	12	16	23	50
Mainliner	10	16	23	50
Kalamazoo Cruiser	7			21

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After	OPERATING TAPPET CLEARANCE (Hot unless noted)	SPARK PLUG	Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-wheel Teeth B-Before A-After	Comp. Pressure at Cranking Speed
BECK Silverliner	Cum NHB600	—	—	—	—	—	—	—	—	—
29	Cum JBS600	—	—	—	—	—	—	—	—	—
Mainliner	IHC-RD450	—	—	—	—	—	—	—	—	—
Kalamazoo Cruiser	IHC 269	6-3 1/8 x 4 1/2	40-2000	112-11 5	.018 .018	AC 43	.024 .024	3°B		

VALVE SPRINGS

MODEL	Valve Open				Valve Closed			
	Pressure (Ave.) Pounds		Length Inches		Pressure (Ave.) Pounds		Length Inches	
BECK (All models).....	See	engine			pages	112-115		
IHC 269.....	107	1.668				2 1/2*		

*—Free length.

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
BECK (All models)	1/8-1/4	1°	3°	8°
Kalamazoo Cruiser	3/8-1/2	1	1	8 1/2

LUBRICATION

MODEL		Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	UNIVERSAL JOINT
BECK (All Models) Kalamazoo Cruiser		(S) 30 (S) 40	20@10° to 32° (W) 20	10 below 10°	140	90	140	90	140	140	
S—Summer. W—Winter.											

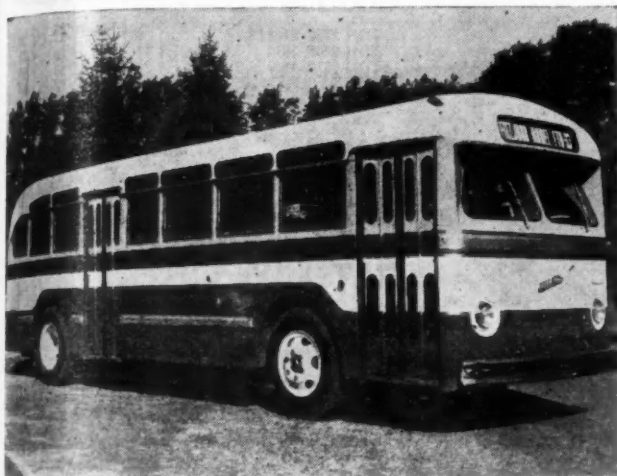
S—Summer.

W—Winter.

FITZJOHN

Bus Data

FLXIBLE



Models 310, FTG, FTD, 510, 635



Models 218B1-51, 218F1-52

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 112-115

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded	SAE Group No.
FITZJOHN 310, FTG, 510, 635	150	19	P	4D
FTG	205*	27	P	8D
FLXIBLE—All Models	155	27	P	8D†

†—AABM Group No.
*—Two batteries.

TENSIONS

ENGINE MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
FITZJOHN—JXLD.	75	A	58
WXL.	60	B	53
DWXL.	158	175	225
140GK	175	133	100
FLXIBLE—Buick	65-70	100-110	60-65
218F1-52	80	90	90

A—Front & intermediate 70 = center & rear 60.
B—Front & intermediate 105 = center & rear 70.

CAPACITIES

MODEL	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Axle Pints	Cooling System Capacity, Quarts
FITZJOHN 310 (JXLD)	9	11	20	36	
FTG (JXLD)	9	16	11	48	
FTG (WXL)	10	16	11	51	
FTD (DWXL)	14	16	11	56	
510 (JXLD)	8	11	15	28	
635 (140GK)	15	24	23	56	
FLXIBLE—218B1-51	16	12	23	52*	
218F1-52	12	12	23	58*	

*—Including two heaters.

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC		Cold Intake	Cold Exhaust	Make	Type	Size	Gap				
FITZJOHN—310, FTG, 510	Her JXLD	6-4x4 1/2	28 @ 1600	5°B	Var	.010	.012	.014	AL	TT4	7/8"	.025	.018	TC	.....
FTG	Her WXL	6-4 1/2 x 4 1/2	25 @ 1600	2°A	Var	.010	.012	.016	CH	J6	14mm	.025	.018	TC	.....
FTG	Her DWXL	6-4 1/2 x 5	40 @ 1600	17 1/2°B	Var	.010	.008	.010		Diesel						
635	Wau 140GK	6-4 1/2 x 5 1/2	40 @ 2600			.012	.012	.024	CH	H9	14mm	.025	.018	TC	.....
FLXIBLE—218B1-51	Buick FB320	8-3 1/4 x 4 1/2	35 @ 35	14°B			.015	.015	AC	46X	14mm	.025	.015	6°B	.....	120
218F1-52	FAGEOL FTC-180	6-4 1/2 x 4 1/2	45 @ 2000			.018	.018	.018	CH*	XJ6	14mm	.035	.022	4°B	.....	155

*AL-ARSA or AC 48 & 43

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
FITZJOHN	See engines pages 112-115			
FLXIBLE—218B1-51	I. 52 O. 120 136	1 1/8 1 1/4 1 1/8	24 52 68	1 1/8 1 1/4 1 1/8

I—Inner. O—Outer.

FRONT END

MODEL	TOE-IN (inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
FITZJOHN—310	1/8	1	1 1/2	8
FTG FTD	1/8	1	2	8 1/2
510	1/8	1	1 1/2	8
635	1/8	1	2	8
FLXIBLE—218B1-51	1/8-1/4	1	2	5 1/2
218F1-52	1/8-1/4	1	2	5 1/2

LUBRICATION

MODEL	ENGINE		TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range		Summer	Winter	Summer	Winter	Summer	Winter	
FITZJOHN—310	(S)30	(W)20	140	90	140Hyp	90Hyp	140	140	140
FTG, FTD, 510	(S)30	(W)20	140	90	140	90	140	140	140
635	(S)40	(W)40	140	90	140Hyp	90Hyp	140	140	140
FLXIBLE—218B1-51	(S)10 or 20	(W)10 or 20	50MO	50MO	C	C	50MO	50MO	E
218F1-52	(S)30	(W)30	50MO	50MO	C	C	50MO	50MO	E

(S)—Summer. (W)—Winter. Hyp—Hypoid gear lube.
E—Viscous, medium bodied, semi-fluid grease.

MO—Straight mineral oil.

C—Equivalent to U. S. Spec. No. 2-105-S.

Bus Data

GM



Models TDH, TGH, PD

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing pages 112-115

CAPACITIES

MODEL	LUBRICANT CAPACITY				
	Engine Quarts	Trans- mission Fluids	Rear Axle Pinion	Front Axle Pinion	Cooling System Capacity, Quarts
TGH 2708, 3101	9	26	11.25		29
TDH 3209, 3612	17	60	20		42
TDH 4010, 4509	25	60	20		50
PD 4103	25	21	19		56

BATTERY

MODEL	App. Hr. Capacity	Number of Plates	Terminal Grounded State	Group No.
TGH 2708, 3101	150	19	Pos	4D
TDH 3209, 3612, 4010, 4509	180	17	Pos	8G
PD 4103	205	27	Pos	8D

TENSIONS

ENGINE MODEL	Cylinder Head (pounds-foot)	Main Bearings (pounds-foot)	Connecting Rod Bearings (pounds-foot)
270	70-80	70-80	40-45
4-71, 6-71	165-175	(Note 155-185 Bolts 180-190)	85.75

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)			SPARK PLUG			Breaker Point Gap	Spark Occurs °C B-Before A-After	Spark Occurs Fly-Wheel Teeth °C B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake Tappet Clearance for Valve Timing	Intake	Exhaust	Make	Type	Size	Gap			
TGH 2708, 3101	GMC 270	6-3 1/8 x 4	40-3200a	14°B	.....	.012	.012	.020	AC	44 COM	14mm	.030	A	5°B	110 Min 385° 385°
TDH 3209, 3612 †	GMD 4-71	4-4 1/4 x 5	40-2000a	.....	.....	.....	.....	.009	.....	Diesel	.....	.....	.....	.....	.....
TDH 4010, 4509, PD 4103 †	GMD 6-71	6-4 1/4 x 5	40-2000a	.....	.....	.....	.....	.009	.....	Diesel	.....	.....	.....	.....	.....

*—At 500 rpm.

†—All Diesels.

a—25 psi minimum at speeds shown for worn engines.

A—.018—.024.

VALVE SPRINGS

MODEL	VALVE SPRINGS			
	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
270	147	1 7/8	58	1 1/8
4-71, 6-71 Exhaust	140	1 1/4	44	2 3/8

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
TGH 2708, 3101	1/8-1/4	1	5 1/2-6 1/2	8 1/2
TDH 3209, 3612	1/8-1/4	1	5 1/2-6 1/2	8 1/2
TDH 4010, 4509	1/8-1/4	1	5 1/2-6 1/2	8 1/2
PD 4103	1/8-1/4	1	5 1/2-6 1/2	8 1/2

LUBRICATION

LUBRICATION	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNI- VERSAL JOINT
	MODEL	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer		Winter
TGH-2708, 3101	30 above 90°	20 above 32°	20W below 32°	A	A	90	90	B	B	80
TDH-3209, 3612, 4010, 4509	30 above 20°	20W below 20°	.....	C	C	140	90	B	B	80
PD4103	30 above 20°	20W below 20°	.....	50	50	140	90	B	B	80

A—Automatic transmission fluid, type A.

B—Special steering gear lube

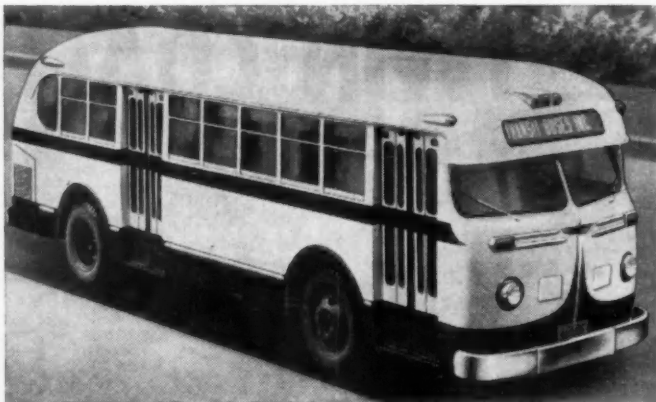
C—Special hydraulic transmission oil.

SOUTHERN

TRANSIT



Models F-31, F-35, F-41, S-36, S-41, S-45



Model 01

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing pages 112-115

BATTERY

MODEL	Amp Hr. Capacity	Number of Plates	Terminal Grounded	SAE Group No.
SOUTHERN All Models	160*	102	Pos	...
TRANSIT 01	160	17	Pos	8G

*—Discharge at 20 hr.

TENSIONS

ENGINE MODEL	Cylinder Head (pounds-foot)	Main Bearings (pounds-foot)	Connecting Rod Bearings (pounds-foot)
SOUTHERN Wau. 6MZA	75	75	68
Wau. 140GKB	130	130	100
TRANSIT 01	70-75	100-110	100-110

CAPACITIES

MODEL	LUBRICANT CAPACITY				Cooling System Capacity, Quarts
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Axle Pints	
SOUTHERN F-31M	15	8	20	60	
F-31H	15	8	20	60	
F-35M, F-41M	15	8	23	60	
F-35H	15	8	23	60	
S-36H	14	9	23	60	
S-36M	14	9	23	60	
S-41H, F-45H	14	9	31	60	
S-41M, F-45M	14	9	31	60	
TRANSIT 01	8	9	14	40	

M—Mechanical trans.
H—Hydraulic trans.

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Flywheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap				
SOUTHERN COACH, Note 1																
F-31M, F-31H, F-35M, F-35H, F-41M.....	Wau 6MZA*	6-4 1/2 x 4 1/2	40-2100	8°B	2.83	.008	.010C	.020C	CH	8 COM	18mm	.025	.020	5B	TC	80†
S-36M, S-36H, S-41M, S-41H, S-45M, S-45H	Wau 140GKB	6-4 1/2 x 5 1/2	40-2100	15°B	5.3	.017	.013C	.025C	CH	H-9	14mm	.025	.020	TC	TC	100†
TRANSIT 01	Con B6427	6-4 1/2 x 4 1/2	40-50-2600	6 1/2°B	2 1/2°B	.022	.017C	.022C	CH	5 COM	18mm	.030	.022	6°B	2B	95†

*—Horizontal.

†—Minimum.

C—Cold.

Note 1—Models designations ending in M have mechanical trans. Models designations ending in H have hydraulic transmissions.

VALVE SPRINGS

ENGINE MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
SOUTHERN Waukeesa 6MZA	101	1 1/4	64	2 1/4
140GKB	127	1 1/4	67	2 1/4
	70	1 1/4	30	1 1/4
TRANSIT Con. B6427	137	1.316	65.2	1.617
	151	1.316	72.5	1.617

O.—Outer. I.—Inner.

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
SOUTHERN F-31, F-35*	1/8 ± 1/8	1 ± 1/2	1	8
All Models†	1/8 ± 1/8	1 ± 1/2	1	5 1/2
TRANSIT 01	1/8 ± 1/8	1	3	8 1/2

*—With 35141 or 36008 axles.
†—With F-900 series axle.

LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
SOUTHERN All Models	40 above 70°	30 above 50°	A	50	50	0-65*	0-65*	250	180	CL
TRANSIT 01	30-40 above 50°	20 for 20°-50°	10-20 for 0°-20°	140MO	90MO	140EP	90EP	90EP	90EP	140MO

A—20/20W above 30°, 10W below 30°.

CL—Chassis lube.

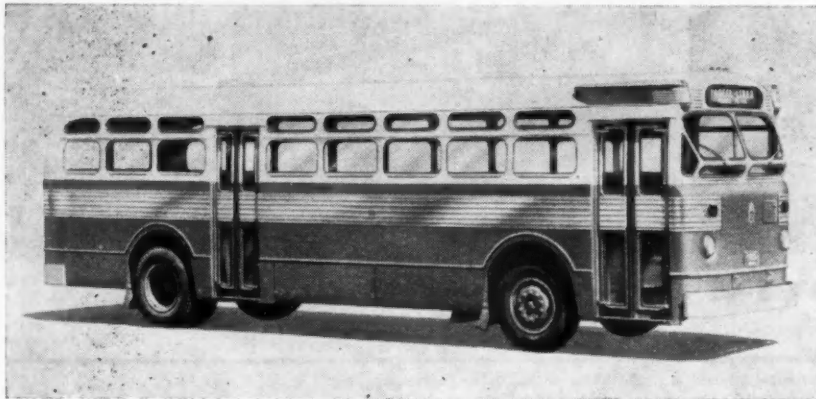
*—Government specification.

MO—Mineral oil straight.

EP—Extreme pressure gear oil

Bus Data

TWIN COACH



Models FL30, FL33, FL35, FL40

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing pages 112-115

CAPACITIES

MODEL	LUBRICANT CAPACITY				
	Engine Quarts	Trans-mission Pints	Rear Axle Pints	Front Axle Pints	Cooling System Capacity, Quarts
FL-30, FL-33	20*	7**	18a	32†	32†
FL-35, FL-40	20*	7**	21a	32†	32†

a—Pounds.
*—12 qt. change.
**—Mech. 11 pts.
†—Without heaters.
Quantities shown are .9: each engine-transmission unit.

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded	SAE Group No.
All Models	158	17	Pos	8G

TENSIONS

ENGINE MODEL	Cylind. Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
FTC-180, 210	80	90	90

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Flywheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap				
Engines Interchangeable.....	FTC-180	6-4 1/4 x 4 3/4	45-2000	12°B	.....	.018	.012	.015	AL*	AR-8	14mm	.035	.018	TC	TC	150†
In All Models.....	FTC-210	6-4 1/4 x 5	45-2000	12°B	.....	.018	.012	.015	AL*	AR-8	14mm	.035	.018	TC	TC	150†
	FLT-200	6-4 3/8 x 5	45-2000	12°B	.....	.018	.012	.015	AL*	AR-8	14mm	.035	.018	TC	TC	.....

*—Champion or Auto-Lite spark plugs can be used in both engines.

†—At 200 rpm.

*—Champion or Auto-Lite spark plugs can be used in both engines.

†—At 200 rpm.

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
FTC-180, 200, 210	132-140	1 1/4	65-72	1 1/4

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
All Models	1/8	1	1 1/2	5 1/2

LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
FL-30, FL-33	10 above 0°	20 above 20°	30 above 50°*	140EP†	90EP†	140EP	90EP	140EP	90EP	No. 1 CG
FL-35, FL-40	10 above 0°	20 above 20°	30 above 30°*	140EP†	90EP†	140EP	90EP	140EP	90EP	No. 1 CG

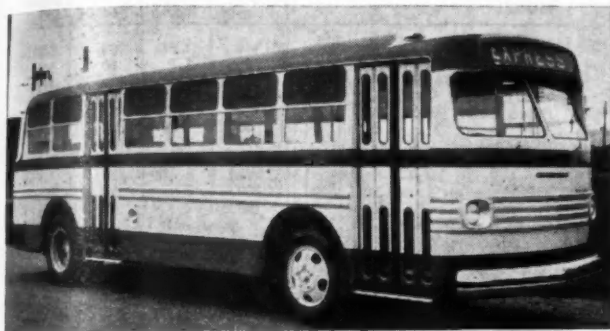
*—SAE 40 above 75°F.

†—With torque converter use SAE 50 engine oil, summer and winter.

EP—Extreme pressure lube.

CG—Chassis grease.

MARMON HERRINGTON



Models 8MB, 8M2B

WHITE



Models 1136, 1136S, 1140, 1140S,
1144, 1144S

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded	SAE Group No.
MAR-HER (All Models).....	156	17	Pos	8G
WHITE (All Models).....	180	17	Pos	8G

TENSIONS

ENGINE MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
MAR-HER (All Models).....	Bolts 65-70 Nuts 50-55	95-100	.....
WHITE—280TA.....	105-110	70-75	70-75
24A.....	85-90	70-75a	48-52

a—Front, center and rear. Intermediate, 105-115.

CAPACITIES

MODEL	Engine Quarts	Transmission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
MAR-HER (All Models).....	9†	9	7	34‡
WHITE—1136, 1140.....	15†	90	22	21‡
1144.....	10†	80	22	21‡
1136S, 1140S.....	15†	20	22	21‡
1144S.....	10†	20	22	27‡

*—Gallons; with heaters.

†—Oil change with old filter.

‡—Without heater.

TUNE UP

MODEL	Standard Engine Make and Mode	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After	OPERATING TAPPET CLEARANCE (Hot unless noted)	SPARK PLUG	Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Flywheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
MAR-HER 8MB, 8M2B.....	Ford "254"	6-3.5x4.4	50@2000	11°B	.015	CH H-9 Com	.025	TC*	.....	.....
WHITE 1136, 1140, 1136S, 1140S.....	Own 280TA	6-4½x5	.....	15°B	—ZE RO	CH 6COM	.025	6°B	.....	.....
1144, 1144S.....	Own 24A	12-4½x4½	.....	10°B	—ZE RO	CH 6COM	.025	.....	.....	.....

*—Automatic advance begins at 500 RPM and continues to a total of 18°.

VALVE SPRINGS

MODEL	VALVE SPRINGS			
	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
MAR-HER (All Models).....	112-120	.....	47-53	2.109
WHITE 1136, 1140, 1136S, 1140S (280TA).....	190	1.827	93*	2.250
1144, 1144S (24A).....	124	2.013	77*	2.394

*—Installed height.

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
MAR-HER (All Models).....	0-½	1	3	.....
WHITE (All Models).....	½	1	0	8½

LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
MAR-HER (All models).....	30 above 32°	20 above 10°	10W@-10°-10°	50†	50†	140MO	90MO	90EP	90EP	140
WHITE 1136, 1140, 1144.....	(S) 30	(W) 20	.....	20*	10*	140	90	SGL	SGL	140
1136S, 1140S, 1144S.....	(S) 30	(W) 20	.....	70	70	140	90	SGL	SGL	140

(S)—Summer. (W)—Winter.

EP—Mild extreme pressure lube

*—Approved torque converter fluid must be used.

MO—Mineral oil straight.

SGL—Steering gear lubricant 150-160.

†—Engine oil

CONTINENTAL

Series F, M, B, T, R, U, S, TD, RD

TENSIONS

MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
All Models	$\frac{3}{4}$ " 35-40 7-75 90-100 130-140 145-155	$\frac{1}{2}$ " 20-25 35-40 70-75 85-95 100-110	

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG			Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Flywheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake	Exhaust	Make	Type	Size	Gap			
F4124		4-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	35-40	TC		.014	.014			18mm	.025			115
F4162		4-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	35-40	TC		.014	.014			18mm	.025			115
F6186		6-3x4 $\frac{1}{2}$	35-40	2°B		.014	.014A			18mm	.025			118
F6209		6-3x4 $\frac{1}{2}$	35-40	2°B		.014	.014			18mm	.025			118
F6228		6-3x4 $\frac{1}{2}$	30-40	2°B		.014	.014			18mm	.025			115
M6271		6-3x4 $\frac{1}{2}$	40-50	6 $\frac{1}{2}$ °B		.017	.020			18mm	.025			115
M6290		6-3x4 $\frac{1}{2}$	40-50	6 $\frac{1}{2}$ °B		.017	.020			18mm	.025			115
M6330		6-4x4 $\frac{1}{2}$	40-50	6 $\frac{1}{2}$ °B		.017	.020			18mm	.025			115
B6371		6-4x4 $\frac{1}{2}$	40-50	6 $\frac{1}{2}$ °B		.017	.022			18mm	.025			115
T6371		6-4x4 $\frac{1}{2}$	40-50	20°B		.017	.022			18mm	.025			115
B6427		6-4x4 $\frac{1}{2}$	40-50	16°B		.017	.022			18mm	.025			118
T6427		6-4x4 $\frac{1}{2}$	40-50	20°B		.017	.022			18mm	.025			118
U6501		6-4x4 $\frac{1}{2}$	40-50	17°B		.020	.024			18mm	.025			120
R6513		6-4x4 $\frac{1}{2}$	50-60	19°B		.020	.024			18mm	.025			120
R6572		6-4x4 $\frac{1}{2}$	50-60	19°B		.020	.024			18mm	.025			120
R6602		6-4x4 $\frac{1}{2}$	50-60	17°B		.020	.024			18mm	.025			120
S6749		6-5x4 $\frac{1}{2}$	40-60	19°B		.020	.024			18mm	.025			120
TD6427		6-4x4 $\frac{1}{2}$	40-80	20°B		.017	.022			Die sel				376
RD6572		6-4x4 $\frac{1}{2}$	40-80	19°B		.020	.024			Die sel				376
K6330		6-4x4 $\frac{1}{2}$	40-50	22°B		.020	.024			18mm	.025			376

—With Roto Valve .010.

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
B6371, B6427	144	1.316	69	1.017
F4124, F4162	100	1.21	50	1.01
F6186, F6209, F6228	103-110	1.34	47-53	1.01
M6271, M6290, M6330	119	1.521	61	1.17
R6513, R6572, R6602	0.	1.617	67	2.117
RD6572	1.	90	1.367	1.867
T6371, T6427, TD6427	0.	173	1.110	2.4
S6749	0.	130	1.016	1.548
	1.	61	29	1.453
	1.	200	90	2.4
	1.	100	45	2.1

I—Inner. O—Outer.

CUMMINS

4, 6 and 12 Cylinder Series

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
AA-600, JS-600	108-118	2	66-72	2 $\frac{1}{8}$
JBS-600	108-118	2	66-72	2 $\frac{1}{8}$
HB-400, HB-600, HBS-600, HRB-600	179-198	2 $\frac{1}{8}$	110-122	2 $\frac{1}{8}$
NHB-600, NHBBS-600, NHRBS-600, NVH-1200, NVHS-1200, NHHB-600	104-114	1 $\frac{3}{8}$	74-82	2 $\frac{1}{4}$

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at Governed R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG			Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Flywheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake	Exhaust	Make	Type	Size	Gap			
AA-600		6-4x5	30-50	6°B		.015	.025		Die sel					825
JBS-600		6-4x5	30-50	41°B		.015	.025		Die sel					825
HB-400		4-4x5	30-50	5°B		.014	.022		Die sel					825
HB-600		6-4x5	30-50	5°B		.014	.022		Die sel					825
HBS-600		6-4x5	30-50	77°B		.016	.026		Die sel					825
HRB-600		6-5x6	30-50	5°B		.014	.022		Die sel					825
HRBS-600		6-5x6	30-50	77°B		.016	.026		Die sel					825
NHB-600		6-5x6	30-50	20°B		.014	.027		Die sel					825
NHBBS-600		6-5x6	30-50	77°B		.014	.027		Die sel					825
NHRBS-600		6-5x6	30-50	55°B		.014	.027		Die sel					825
NVH-1200		12-5 $\frac{1}{2}$ x6	30-50	20°B		.014	.027		Die sel					825
NVHS-1200		12-5 $\frac{1}{2}$ x6	30-50	77°B		.014	.027		Die sel					825
NHHB-600		6-5x6	30-50	20°B		.014	.027		Die sel					825
NHHBS-600		6-5x6	30-50	77°B		.014	.027		Die sel					825

TENSIONS

Engine	Part	Step 1	Step 2	Step 3	Step 4
		Initial Tighten	Release Tension	"Snug" Tighten	Final Tighten
AA-600	Main Bearings	160 lb-ft	Loosen Completely	30 lb-ft	60 deg
	Connecting Rod Bearings	25-30 lb-ft	Loosen Completely	30-35 lb-ft	60 deg
JBS-600	Main Bearings	160 lb-ft	Loosen Completely	30-35 lb-ft	60 deg
JBS-600	Connecting Rod Bearings	25-30 lb-ft	Loosen Completely	25-30 lb-ft	60 deg
HB, HBS, HRB, HRBS	Main Bearings	320 lb-ft	Loosen Completely	140 lb-ft	30 deg
NHB, NHBS, NHRBS, NHHB	Connecting Rod Bearings	140 lb-ft	Loosen Completely	50-55 lb-ft	60 deg
NVH, NVHS	Main Bearings	400 lb-ft	Loosen Completely	125 lb-ft	60 deg
	Connecting Rod Bearings				140 lb-ft

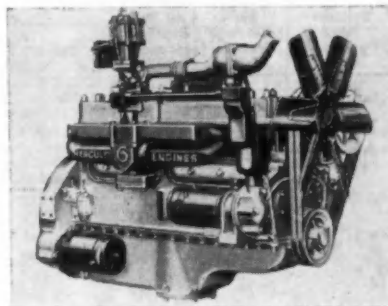
TENSIONS

MODEL	Cylinder Head (pounds-foot)	Main Bearings (pounds-foot)	Connecting Rod Bearings (pounds-foot)
ZX Series	35	77	25
IX Series	33	77	42
JX Series	c	*60	56
QX Series	d	*70	39
TDXB	70	*60	115
		*70	
		*105	
		*123	
DWX, DWXLD Series	158	175	+225
DFXH-F	350	260	†158
WX Series	75	*70	263
		*105	105
		*105	†153
YX, RX Series	75	*105	105
		*123	†115
RXL Series	80	175	166
			†123
HX Series	105	*193	263
		*210	
D1XB, D1X4D	158	105a	180
		85b	
DOO Series	158	*77	175
		*95	
DJX Series	158	*77	175
		*95	
DRX Series	158-175	175	175
	175-280		
DFX Series	300	280	263

+—Connecting rod $\frac{1}{2}$ in.
 •—Center and rear.
 †—Connecting rod $\frac{3}{4}$ in.
 ‡—Connecting rod $\frac{1}{4}$ in.
 *—Front and intermediate.
 †—Babbitt.
 a—Front, center and rear.
 b—Intermediate.
 c—85 ft. lbs. on row of screws on manifold side; 90 ft. lbs. on all others; 60 ft. lbs. when studs are used.
 d—80 ft. lbs. on row of screws on manifold side; 90 ft. lbs. on all others; 60 ft. lbs. when studs are used.

Engine Data

HERCULES



Series ZX, IX, QX, JX, WX,
YX, RX, HX and Diesels

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
ZX Series	35	4 1/2	22	1 1/2
IX Series	42	1 1/2	21	1 1/2
QX, JX Series	58	1.594	43	1.920
QX Series	37-41	1 1/2	17-19	1 1/2
TDX, OX, WX, WXL, YX, RX, RXL Series	102	2 1/2	50	2 1/2
HX Series	84	3 1/2	47	3 1/2
	50	2 1/2	27	3 1/2
D1XB, D1X4D	49	1.2125	26	1.5625
	34	1.0575	16	1.4375
DOO, DJX Series	55	1.406	31	1.781
	37	1.261	19	1.656
DWXL, DWX Series	84	1 1/2	38	1 1/2
	74	1 1/2	28	1 1/2
DRX Series	48	1.449	27	1.844
	30	1.355	17	1.750
DFX Series (Except DFXH)	94	2 1/2	55	3 1/2
	57	2 1/2	32	3 1/2
DFXH	124	1 1/2	63	2 1/2
	96	1 1/2	42	2 1/2

I—Inner. O—Outer.

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Flywheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake	Exhaust	Make	Type	Size	Gap				
IX Series			15-1000	5°A	Var	.006	.006	.008	Opt		.025	.020	N	N	Opt
JXA, JXF, JX6, JXE3, JXB, JXD			26-1600	5°A	Var	.010	.008	.010	Opt		.025	.020	N	N	Opt
QXA, QXB, QXC, QXD			26-1600	5°B	Var	.006	.006	.008	Opt		.025	.020	N	N	Opt
WX Series			26-1600	2°A	Var	.010	.006	.010	Opt		.025	.020	N	N	Opt
ZX Series			15-1000	5°A	Var	.006	.006	.006	Opt		.025	.020	N	N	Opt
QXLD		6-3 1/4 x 4 1/4	26-1600	5°B	Var	.006	.008	.010	Opt		.025	.020	N	N	Opt
JX4-E		4-3 1/4 x 4 1/4	32-1600	5°B	Var	.010	.010	.010	Opt		.025	.020	N	N	Opt
JX4-C		4-3 1/4 x 4 1/4	32-1600	5°B	Var	.010	.010	.010	Opt		.025	.020	N	N	Opt
JX4-D		4-4 x 4 1/4	32-1600	5°B	Var	.010	.010	.010	Opt		.025	.020	N	N	Opt
JXLD		6-4 x 4 1/4	35-1600	5°B	Var	.010	.010	.010	Opt		.025	.020	N	N	Opt
RXB		6-4 1/2 x 5 1/4	26-1600	2°A	Var	.010	.010	.016	Opt		.025	.020	N	N	Opt
TDXC		6-4 1/2 x 5 1/4	36-1600	5°B	Var	.010	.010	.016	Opt		.025	.020	N	N	Opt
RXC		6-4 1/2 x 5 1/4	36-1600	2°A	Var	.010	.010	.016	Opt		.025	.020	N	N	Opt
TDXB		6-4 1/2 x 5 1/4	36-1600	5°B	Var	.010	.010	.016	Opt		.025	.020	N	N	Opt
RXLC		6-4 1/2 x 5 1/4	36-1600	2°A	Var	.010	.010	.016	Opt		.025	.020	N	N	Opt
RXLD		6-4 1/2 x 5 1/4	36-1600	2°A	Var	.010	.010	.016	Opt		.025	.020	N	N	Opt
RXLDH		6-4 1/2 x 5 1/4	36-1600	2°A	Var	.010	.010	.016	Opt		.025	.020	N	N	Opt
HXB		6-5 x 6	36-1600	5°B	Var	.015	.010	.016	Opt		.025	.020	N	N	Opt
HXC		6-5 1/2 x 6	35-1600	5°B	Var	.015	.010	.016	Opt		.025	.020	N	N	Opt
HXD		6-5 1/2 x 6	35-1600	5°B	Var	.015	.010	.016	Opt		.025	.020	N	N	Opt
HXE		6-5 1/2 x 6	35-1600	5°B	Var	.015	.010	.016	Opt		.025	.020	N	N	Opt
D1X4D		4-3 1/4 x 4 1/4	45-2000	17 1/2°B	Var	.010	.010	.010	Die set						
D1XB		6-3 1/4 x 4 1/4	45-2000	17 1/2°B	Var	.010	.010	.010	Die set						
D1XB		6-3 1/4 x 4 1/4	45-2000	12°B	Var	.010	.010	.010	Die set						
D1XC		6-3 1/4 x 4 1/4	45-2000	12°B	Var	.010	.010	.010	Die set						
D1XH		6-3 1/4 x 4 1/4	45-2000	12°B	Var	.010	.010	.010	Die set						
D1XH-F		6-3 1/4 x 4 1/4	45-2000	12°B	Var	.010	.010	.010	Die set						
DOOB		4-3 1/4 x 4 1/4	30-1200	12°B	Var	.010	.010	.010	Die set						
DOOC		4-4 x 4 1/4	30-1200	12°B	Var	.010	.010	.010	Die set						
DOOD		4-4 1/4 x 4 1/4	30-1200	12°B	Var	.010	.010	.010	Die set						
DWXL		6-4 1/2 x 5 1/4	40-1600	17 1/2°B	Var	.010	.010	.010	Die set						
DWXL		6-4 1/2 x 5 1/4	40-1600	17 1/2°B	Var	.010	.010	.010	Die set						
DWXL-F		6-4 1/2 x 5 1/4	40-1600	17 1/2°B	Var	.010	.016	.016	Die set						
DRXB		6-4 1/2 x 5 1/4	30-1200	12°B	Var	.016	.016	.016	Die set						
DRXC		6-4 1/2 x 5 1/4	30-1200	12°B	Var	.016	.016	.016	Die set						
DFXB		6-5 x 6	50-1200	5°B	Var	.015	.010	.016	Die set						
DFXC		6-5 1/2 x 6	50-1200	5°B	Var	.015	.010	.016	Die set						
DFXD		6-5 1/2 x 6	50-1200	5°B	Var	.015	.010	.016	Die set						
DFXE		6-5 1/2 x 6	50-1200	5°B	Var	.015	.010	.016	Die set						
DFXH		6-5 1/2 x 6	50-1200	5°B	Var	.015	.010	.016	Die set						
DFXH-F		6-5 1/2 x 6	50-1200	19°B	Var	.014	.010	.016	Die set						

F—Horizontal type engine.

N—Varies with compression ratio.

BUDA

Series 6B, HP, K, L, LO, 6MO,
6BD, 6DT, 6DC, 8DC, 6DA, 8DA

TENSIONS

MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
All Models	5/8"-80-70 3/4"-75-85 7/8"-95-105 1"-125-135 1 1/8"-150-160	1 1/4"-195-20 1/2 1 1/2"-210-230 1 3/4"-230-250 1 7/8"-245-275 2"-285-315 2 1/4"-325-350	

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tapet Clearance for Valve Timing	OPERATING TAPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap				
6B-230		6-3 1/2"x4 1/2"	20-1600	10°B		.008	.009	.009	CH	J-11	14mm	.027	.018			
6B-273		6-3 1/2"x4 1/2"	20-1600	10°B		.008	.009	.009	CH	J-11	14mm	.027	.018			
HP326		6-3 1/2"x4 1/2"	40-1400	TC		.006	.006	.009	CH	15A	18mm	.025	.018			180
HP361		6-3 1/2"x4 1/2"	40-1400	TC		.006	.006	.009	CH	15A	18mm	.025	.018			180
K428		6-4 1/2"x5 1/2"	40-1400	6°B		.006	.006	.009	CH	9COM	18mm	.025	.018			87
L525		6-4 1/2"x5 1/2"	40-1600	6°B		.006	.006	.009	CH	9COM	18mm	.025	.018			87
LO525		6-4 1/2"x5 1/2"	40-1500	10°B		.009	.009	.018	CH	J-6	14mm	.027	.018			83
6MO893		6-5 1/2"x6 1/2"	40-1400	10°B		.010	.015	.015	CH	6COM	18mm	.025	.018			185
6MO970		6-5 1/2"x6 1/2"	40-1400	10°B		.010	.015	.015	CH	6COM	18mm	.025	.018			125
6BD-230		6-3 1/2"x4 1/2"	20-1600	20°B		.008	.009	.009		Diesel						
6BD-273		6-3 1/2"x4 1/2"	20-1800	20°B		.008	.009	.009		Diesel						
6DT-317		6-3 1/2"x4 1/2"	30-1600	20°B		.009	.009	.012		Diesel						
6DT468		6-4 1/2"x5 1/2"	30-1600	17°B		.010	.012	.015		Diesel						
6DTS-468		6-4 1/2"x5 1/2"	40-1800	48°B			.016	.020		Diesel						
6DA-779		6-5 1/2"x6 1/2"	40-1400	20°B		.010	.015	.015		Diesel						
6DA-844		6-5 1/2"x6 1/2"	40-1400	20°B		.010	.015	.015		Diesel						
6DAS-844		6-5 1/2"x6 1/2"	40-1400	30°B		.010	.015	.015		Diesel						
6DA-1125		6-5 1/2"x6 1/2"	40-1400	20°B		.010	.015	.015		Diesel						
6DAS-1125		6-5 1/2"x6 1/2"	40-1400	30°B		.010	.015	.015		Diesel						

WAUKESHA

Models 190GL, 195GKA, 6BZ, 6MZA, 6SRKR; 140, 145, 6WA Series and Diesels

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
190GL	71	1 1/4	48	1 1/4
195GKA	124-10	1 1/4	48-4	2 1/4
6BZ	110	1 1/4	61	2 1/4
6MZA	101	1 1/4	64	2 1/4
6WAKD	160	3 1/4	90*	3 1/4
135DK	162	2 1/4	82	2 1/4
140GK	O, 86	1 1/4	31	2 1/4
	I, 85	1 1/4	28	1 1/4
140GKB, 140GZB (Hi Output)	O, 127	1 1/4	67	2 1/4
	I, 70	1 1/4	30	1 1/4
6SRKR	101	2 1/4	68	2 1/4
145GK, 145GZ	O, 118	2 1/4	48	2 1/4
	I, 81	2 1/4	32	2 1/4
145GKB (Hi Output)	O, 158	2 1/4	67	2 1/4
	I, 100	2 1/4	42	2 1/4
190DLC	71-6	1 1/4	48-4	1 1/4
148DK	O, 118-9	2 1/4	48-4	2 1/4
	I, 81-6	2 1/4	32-3	2 1/4
6WAKD	O, 140-10	2 1/4	60-3	3 1/4
	I, 139-11	2 1/4	58-4	3 1/4

I—Inner. O—Outer.

*—Single spring construction used when engines operate constantly at speeds under 1400 RPM.

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
K-428 (1936-52)	125-136	1 1/4	51-57	2 1/4
LO-525 (1936-52)	125-136	2 1/4	42-49	3 1/4
6MO-893, 6MO-970 (1946-52)	145-155	2 1/4	62-68	2 1/4
6DTS-468	155-165	1 1/4	55-61	2 1/4
6DA-779, 6DA-844, 6DAS-844, 6DA-1125, 6DAS-1125	200-210	2 1/4	76-88	2 1/4
HP-326, HP-351	96-104	1 1/4	34-38	1 1/4
L-525	125-136	1 1/4	51-57	2 1/4
6DT-317	97-105	1 1/4	40-44	1 1/4
6DT-468	136-145	1 1/4	52-58	2 1/4
6BD-230, 6BD-273	122-131	1 1/4	42-47	1 1/4

TENSIONS

MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
190GL	92-100	109-113	46-50 Dry, 44-46 Oil
6BZ	73-75	88-92	67-69
6MZA	73-75	96-100	67-69
195GKA	92-100	109-113	75-77
140GK-140GKB, 140GZB	175	129-133	96-100
6SRKR	73-75	129-133	96-100
145GK-145GKB	175 Long	267-275	67-69
145GZ-145GZB	200 Long	267-275	67-69
6WAK	146-150	292-300	86-88
190DLC	96-100	109-113	67-69
148DK	250-267	292-300	67-69
6WAKD	250-267	292-300	92-96
135DK	130-133	133-135	86-88

TUNE UP

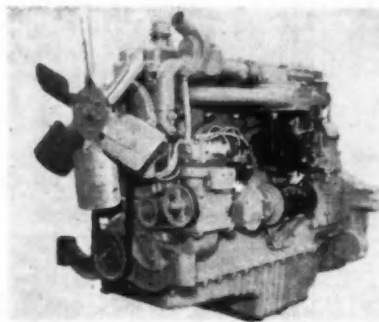
*—At governed speeds. C—Cold.

TENSIONS

L—Large. S—Small.

Note 1—Two per cyl. All exhaust, No. 6. Intake (Butane), No. 8 Intake (Gasoline), No. 9. Note 2—Delco-Remy single and both Auto-Lite, .020. Delco-Remy dual, .015.
Note 3—2 per cyl., all No. 6.
1—Gasoline, 110; Butane, 160.
A—.018 intake side, .020 exhaust side. B—.018-.024. *—Horizontal in line.

Engine Data



**Models 400, 470, 480, 180,
190, 136, and 504**

COMPONENT PARTS

For additional truck data see Specifications Table, Page 147; Bus Specifications Page 142

• KEY TO ABBREVIATIONS AND REFERENCES •

FOOTNOTES

- (1) Shuler and Eaton
- (2) Timken and Eaton
- (3) Shuler and Timken or Eaton
- (4) Shuler and Timken
- (5) Integral with carburetor
- (6) Loadmaster engine available as optional equipment
- (7) Delco-Remy distributor, Bosch magneto, on off-highway units; others, Delco-Remy
- (8) Delco-Remy starter, Electric Auto-Lite generator
- (9) Auto-Lite generator, Leece-Neville starter
- (10) Ensign KGNL or Zen. G3-AW-16
- (11) DeLuxe and Cumo
- (12) Any of these engines optional on any model
- (13) Continental, Hercules, Hall-Scott and Buda engines available in certain Sterling chassis
- (14) Integral with motor
- (15) Starter, D-R; Generator, AL
- (16) Warner or Clark
- (17) Parish or Alcoa

MAKES OF UNITS

- A—American
A-B—American Bosch Corp.
AC—AC Spark Plug Co.
AL—Electric Auto-Lite Co.
AM—Air Mase Corp.
AmL—American Lub.
AmC—American Chain & Cable Co.
AOS—A. O. Smith Co.
Aub—Auburn Clutch Company
A-W—Auto-Lite or Willard

- BaB—Ball and Ball
B&B—Borg & Beck Div.
BD—Budd or Dayton
Bdm—Budd, Dayton or Motor Wheel
Bdd—Budd Wheel Company
Ben—Bendix Products Div.
B-K—Budd or Kelsey Hayes
Bla—Blackstone Corp.
Bld—Blood Bros. Machine Co.
B-L—Brown Lipe (Spicer Mfg. Div.)
B-M—Budd or Motor Wheel
Bos—American Bosch Corp.
Br—Brown
Bud—Buda Co.
BW—Bendix Westinghouse
Car—Carter Carburetor Corp.
C-B—Clark or Budd
Cla—Clark Equipment Co.
Col—Coleman
Con—Continental Motors Corp.
CS—Cleveland Steel Products Co.
Cum—Cummins Engine Co.
Day—Dayton Steel Foundry Co.
DD—Detroit Diesel
Del—DeLuxe Products Corp.
Det—Detroit Steel Products Co.
Dol—Dollinger Corp.
Don—Donaldson Co.
D-M—Dayton or Motor Wheel
D-R—Delco-Remy Div.
Eat—Eaton Mfg. Co.
Ens—Ensign Carburetor Co.
Eri—Erie Malleable Iron Co.
Exl—Exide (Elec. Storage Battery Co.)
Fed—Feddors-Quigan Corp.
Frd—Ford Motor Co.
Ful—Fuller Mfg. Co.
Gem—Gemmer Mfg. Co.

- GI—Globe-Union, Inc.
GO—G & O Mfg. Co.
G-H—Goodyear-Howley
Han—Handy (King Seelye Corp.)
Har—Harrison Radiator Div.
Her—Hercules Motor Corp.
HH—Houdaille-Hershey
Hof—Hoof Products Co.
H-S—Hall-Scott Motor Car Co.
Int—Integral
Jms—Jamestown Metal Equipment Co.
Khm—Kelsey Hayes or Motor Wheel
K-S—King Seelye Corp.
Li—Liggett
L-N—Leece Neville Corp.
Lmg—Long Mfg. Div.
L-R—Lipe Railway Corp.
WCL—W. C. Lipe
Lub—Luber-Finer, Inc.
Mal—Mallory Electric Corp.
Mar—Maremont Auto. Prod., Inc.
Mat—Mather Spring Co.
McC—McCord Radiator & Mfg. Co.
Mic—Michlans Products Corp.
Mid—Midland Steel Products Co.
Mod—Modine Mfg. Co.
Mur—Murray Corp. of America
MW—Motor Wheel Corp.
Nat—National Battery Co.
NEP—New England Products
NUP—New Process Gear
Nug—Wm. W. Nugent Co.
Or—Orschell
Oak—Oakes North Chicago Div.
Par—Parish (Spicer Mfg. Div.)
Pce—Pierce Governor Co.
Pfx—Perflex Corp.

- P-G—Perflex or General Interchangeable
PL—Presto Lite
PS—Propeller Shaft
Pur—Purrolator Products, Inc.
Ro—Ross Gear & Tool Co.
Roc—Rockford Clutch Div.
RP—Rochester Products
Sag—Saginaw Steering Gear Div.
Ser—Service Spring Co.
Sol—Solar
Spi—Spicer Mfg. Div.
SS—Standard Steel Spring Co.
Til—Tillotson Mfg. Co.
Tim—Timken-Detroit Axle Co.
T-S—Tru-Stop (Amer. Chain & Cable)
Tut—Tutill Spring Co.
Uni—United Air Cleaner Div.
UP—Universal Products Co.
US—United States Spring & Bumper Co.
Var—Various
Ver—Vortex Mfg. Co.
Wag—Wagner Electric Corp.
War—Warner Gear Div.
Wau—Waukesha Motor Co.
WCL—W. C. Lipe (Lipe Railway Corp.)
WGB—W-G-B Oil Clarifier, Inc.
Wil—Willard Storage Battery Co.
Win—Winslow Eng. Co.
Wys—Willys Overland Motors, Inc.
Yng—Young Radiator Co.
Zen—Zenith Carburetor Div.

- †—Core only ‡—Spicer 002048
*—A.C. Mech. and Autopulse Dual
**—Own-front universal joint
*—Specifications same, Engine HRB800
‡—Or Orschell

Line Number	TRUCK MAKE AND MODEL NUMBER	POWER PLANT ACCESSORIES					ELECTRICAL EQUIPMENT					CLUTCH Make and Model Number	UNIVER- SALS Make and Model Number	RUNNING GEAR				
		ENGINE Make and Model	Governor Make (If Standard)	Air Cleaner Make (If Standard)	Oil Filter Make (If Standard)	CARBU- RETOR Make and Model Number	Fuel Feed System Make	Radiator Make	Ignition System Make	Generator—Starter Make	Battery—Make			STEERING GEAR Make and Model Number	Hand Brakes Make & Type	Brake Drum Make	Wheels—Make	Springs—Make
1	BROCKWAY																	
2	88WH	Con 38B		Uni		Zen 63A12	AC	GO	AL	AL	Exl	LR 13 in.	Spl 1410	Re TA14	War	Tim	Bdd	Eat
3	128W	Con 40B		Uni		Zen 63A14	AC	GO	AL	AL	Exl	LR 13 in.	Spl 1410	Re TA14	TS	Tim	Bdd	Eat
4	145W	Con 40B			WGB	Zen 63A14	AC	GO	AL	AL	Exl	LR 13 in.	Spl 1800	Re TA66	TS	Tim	Bdd	Eat
5	148W	Con 42B X	KS	Uni	WGB	Zen 63AW16	AC	GO	AL	AL	Exl	LR 14 in.	Spl 1800	Re 151W-TA66	TS	Tim	Bdd	Eat
6	151W, 153W, 153BB	Con 42B X	KS	Uni	WGB	Zen 63AW16	AC	GO	AL	AL	Exl	LR 14 in.	Spl 1800	Re TA71	TS	(1)	Bdd	Eat
7	152W	Con 42B X		Uni	WGB	Zen 63AW16	AC	GO	AL	AL	Exl	LR 14 in.	Spl 1800	Re TA71	TS	(2)	Bdd	Eat
8	154W(T)	Con 42B X		Uni	WGB	Zen 63AW16	AC	GO	AL	AL	Exl	LR 14 in.	Spl 1800	Re TA66	TS	(2)	Bdd	Eat
9	154WH(T)	Con 48B		Uni	Mic	Zen 63AW16	AC	GO	AL	AL	Exl	LR 14 in.	Spl 1800	Re TA66	TS	(2)	Bdd	Eat
10	240XW	Con 48B		Uni	Mic	Zen 63AW16	AC	GO	AL	AL	Exl	LR 14 in.	Spl 1800	Re TA71	TS	(1)	Bdd	Eat
11	260XW	Con 48B		Uni	Mic	Zen 63AW16	AC	GO	AL	AL	Exl	LR 15 in.	Spl 1800	Re TA71	TS	(3)	Bdd	Eat
12	260XL	Con 48B		Uni	Mic	Zen 63AW16	AC	GO	AL	AL	Exl	LR 14 in.	Spl 1800	Re TA71	TS	Tim	Bdd	Eat
13	260XWL	Con 48B		Uni	Mic	Zen 63AW16	AC	GO	AL	AL	Exl	LR 15 in.	Spl 1800	Re TA71	TS	Tim	Bdd	Eat
13	BROWN																	
14	R6572TC-TH, R6572TJ	Con 6572	(14)	AM	Con	Zen 63AW16	*	PG	DR	DR	Exl	LR 15ML-298	Spl	Re TA71	Own	Eri	Eri	Mat
15	140GKT	Wau 140GK	(14)	AM	Con	Zen 63AW16	*	PG	DR	DR	AL	LR 15ML-298	Spl	Re TA71	Own	Eri	Eri	Mat
16	H8600TJD	Cum H8600	(14)	Cum	Lub		Cum	PG	DR	DR	AL	LR 15ML-301	Spl	Re TA71	Own	Eri	Eri	Mat
17	HRB 600TJD, HRB600 TJD	Cum HRB600	(14)	Cum	Lub		Cum	PG	DR	DR	AL	LR 15ML-328	Spl	Re TA71	Own	Eri	Eri	Mat
18	NH8600TJD	Cum NH8600	(14)	Cum	Lub		Cum	PG	DR	DR	AL	LR 15ML-328	Spl	Re TA71	Own	Eri	Eri	Mat
19	6DA844TKD	Bud 6DA844	Bud	Don	Lub		AB	PG	DR	Br		BL-14-2P	Spl 1700	Re TA71	Own	Eri	Eri	Mat
20	6DA779TKD	Bud 6DA779	Bud	Don	Lub		AB	PG	DR	Br		LR15ML326 BL-14-2P	Spl 1700	Re TA71	Own	Eri	Eri	Mat
21	6DTS468TKD	Bud 6DTS468	Bud	Don	Lub		AB	PG	DR	Br		LR-15ML-326 LR 15ML-467	Spl 1700	Re TA71	Own	Eri	Eri	Mat
22	KT, LT, KP, LP	Con R6572	14	AM	Con	Zen 63AW16	AC	GO	DR	DR		LP 15ML-467	Spl 1700	Re TA71	Br	Eri	Eri	Mat
23	KT, LT, KP, LP	Diesels	14	AM	Con	Zen 63AW16	Cum	PG	DR	DR		LP 15ML-467	Spl 1700	Re TA71	Br	Eri	Eri	Mat
24	LS	Con R6572	14	AM	Con	Zen 63AW16	Cum	GO	DR	DR		LP 15ML-467	Spl 1700	Re TA71	Br	Day	Day	Mar
25	LS	Diesels	14	Don	Fram		Cum	GO	DR	DR		Spl 14 in. 2P	Spl 1700	Re TA71	Br	Day	Day	Mar
25	CHEVROLET																	
26	KP, KR, KS	O-T/Master		AC		RP-7004475	AC	Har	DR	DR	DR	Int	Spl**	Sag	Own	Own	BK	Own
27	KT, KU	O-L/Master		AC		Car-BB1-871S	AC	Har	DR	DR	DR	Int	Spl**	Sag	Own	Own	BK	Own
28	VJ	O-T/Master (8)	Han	AC		RP-7002050	AC	Har	DR	DR	DR	Int	Spl	Sag	Own	Own	BK	Own
29	VK, VL	O-T/Master (6)		AC		RP-7002050	AC	Har	DR	DR	DR	Int	Spl	Sag	Own	Own	BK	Own
30	VP(S), VR(S), VS(S)	O-L/Master		AC		Car-BB1-871S	AC	Har	DR	DR	DR	Int	Spl	Sag	Own	Own	BK	Own
31	VV(S), VY(S), VW(S), VX	O-L/Master		AC		RP-7002051	AC	Har	DR	DR	DR	Int	Spl	Sag	Own	Own	BK	Own
31	COLEMAN																	
32	G55S	Bud LO525	Mal	Uni	AC	Hol 885-FFG	AC	Yng	DR	DR	Wil	LR-Mod. 242S	Spl 1600	Re T72183X	T-S			Col
32	CORBITT																	
33	G101	Con-M6330	Zen	Uni	Fram	Zen-63AW12R	AC	Pfx	DR	DR	Exl	LR-13ML	Spl-1500	Re-TA66	Cla	Day	Day	Mar
34	G301	Con-B6371	Zen	Uni	Con	Zen-29W12R	AC	Pfx	DR	DR	Exl	LR-13ML	Spl-1600	Re-TA66	Ful	Day	Day	Mar
35	G302	Con-B6427	Zen	Uni	Con	Zen-29-14R	AC	Pfx	DR	DR	Exl	LR-14ML	Spl-1600	Re-TA66	Ful	Day	Day	Mar
36	G402	Con-T6427	Mal	Uni	Con	Zen-29W16	AC	Pfx	DR	DR	Exl	LR-14ML	Spl-1600	Re-TA66	Ful	Day	Day	Mar
37	G601	Con-R6513	Con	Uni	Mic	Zen-29W16	AC	Pfx	DR	DR	Exl	LR-15ML	Spl-1700	Re-TA70	Own	Day	Day	Mar

Component Parts

A Compilation of Standard Model Data Submitted by Truck Manufacturers

Line Number	TRUCK MAKE AND MODEL NUMBER	POWER PLANT ACCESSORIES						ELECTRICAL EQUIPMENT					CLUTCH	UNIVER- SALS	RUNNING GEAR					
		ENGINE Make and Model	Governor Make (If Standard)	Air Cleaner Make (If Standard)	Oil Filter Make (If Standard)	CARBU- RETOR Make and Model Number	Fuel Feed System Make	Radiator Make	Ignition System Make	Generator-Starter Make		Battery-Make			STEERING GEAR Make and Model Number	Hand Brakes Make & Type	Brake Drum Make	Wheels-Make	Springs-Make	Frame-Make
										Generator-Make	Starter-Make									
CORBITT—(Cont.)																				
37	G802	Con-R6572	Con	Uni	Mic	Zen-29W16	AC	Pfx	DR	DR	Exi	LR-15ML	Spi-1700	Ro-TA70	Own	Day	Day	Mar	Par	
38	G803	Con-R6602	Con	Uni	Mic	Zen-29W16	AC	Pfx	DR	DR	Exi	LR-15ML	Spi-1700	Ro-TA70	Own	Day	Day	Mar	Par	
39	D202	Her-DJXH	Her	AM	Pur		AB	Pfx	DR	DR	Exi	LR-13ML	Spi-1500	Ro-TA66	Cla	Day	Day	Mar	Par	
40	D404	Cum JBS600	Cum	AM	Cum		AB	Pfx	DR	DR	Exi	LR-14ML	Spi 1700	Ro TA70	BW	Own	Day	Mar	Par	
41	D401, D402 Eng., Her-DWXL	Her-DWXC	Her	AM	Pur		AB	Pfx	DR	DR	Exi	LR-14ML	Spi-1600	Ro-TA66	Ful	Day	Day	Mar	Par	
42	D801	Her-DRXC	Her	AM	Pur		AB	Pfx	DR	DR	Exi	LR-15ML	Spi-1700	Ro-TA70	Own	Day	Day	Mar	Par	
43	D801	Cum-HB600	Cum	Uni	Del		Cum	Pfx	DR	DR	Exi	LR-13ML	Spi-1700	Ro-TA71	Own	Day	Day	Mar	Par	
44	D802	Cum-HRB600	Cum	Uni	Lub		Cum	Pfx	DR	DR	Exi	LR-15ML	Spi-1700	Ro-TA71	Own	Day	Day	Mar	Par	
45	D803	Cum-NHB600	Cum	Uni	Lub		Cum	Pfx	DR	DR	Exi	LR-15ML	Spi-1700	Ro-TA71	Own	Day	Day	Mar	Par	
46	D806	Cum-HRB600	Cum	Uni	Lub		Cum	Pfx	DR	DR	Exi	LR-15ML	Spi-1700	Ro-TA71	Own	Day	Day	Mar	Par	
CROSLEY																				
47	Pickup Truck, Panel Delivery.	Own		Fram	Fram	Car WO-870-S	AC	Yng	AL	AL	AL	Cla 2131-2	Nep 6001	Ro S12	Ben	Own	MW	Mat	Own	
DART																				
48	100	Wau 140GK		Don	Fram	Zenith	AC	Own	DR	DR	A	LR 14 in.	Spi 1600	Ro TA71	AmC	Tim	BdJ	Bur	Own	
49	100UG	GM 4055		Vor			GM	Own	DR	DR	A	LR 14 in.	Spi 1600	Ro TA71	AmC	Tim	Bdd	Bur	Own	
50	100UG	Cum HR400		Uni			Cum	Own	DR	DR	A	LR 14 in.	Spi 1600	Ro TA71	AmC	Tim	Bdd	Bur	Own	
51	110	GM 6094		Vor			GM	Own	DR	DR	A	LR 15 in.	Spi 1700	Ro TA71	AmC	Tim	Bdd	Bur	Own	
52	150	Wau 145GK		Don	Fram	Zenith	AC	Own	DR	DR	A	LR 15 in.	Spi 1800	Ro TW74	AmC	Tim	Bdd	Bur	Own	
53	200/3010	Wau 140GK		Don	Fram	Zenith	AC	Own	DR	DR	A	LR 15 in.	Spi 1600	Ro TA74	AmC	Tim	Bdd	Bur	Own	
54	200/456	Wau 140GK		Don	Fram	Zenith	AC	Own	DR	DR	A	LR 15 in.	Spi 1700	Ro TW74	AmC	Tim	Bdd	Bur	Own	
55	250/472	Cum NHBS		Uni			Cum	Own	DR	DR	A	LR 17 in.	Spi 1800		AmC	Tim	Bdd		Own	
56	140	Cum NHRS		Uni			Cum	Own	DR	DR	A	LR 17 in.	Spi 1800	Ro TW74	AmC	Tim	Bdd	Own	Own	
57	140	Bud DAS-1125		Don			Bud	Own	DR	DR	A	LR 17 in.	Spi 1800	Ro TW74	AmC		Bdd	Own	Own	
DIAMOND T																				
58	222, 322	Her QXLD	KS	Uni	Wix	Zen	AC	Own	AL	AL	AL	B & B 11A6	Spi 1350	Ro-TA14	War	Var	Cla	Own	Own	
59	404, 509SC	Her JXB	KS	Uni	Wix	Zen	AC	Own	AL	AL	AL	B & B 11A6	Spi 1410	Ro-TA26	War	Var	Day	Own	Own	
60	404SC	Her JXE	KS	Uni	Fram	Zen	AC	Own	AL	AL	Exi	B & B 11A6	Spi 1410	Ro-TA21	War	Var	Cla	Own	Own	
61	420	Her JXB	KS	Uni	Wix	Zen	AC	Own	AL	AL	AL	B & B 11A6	Spi 1410	Ro-TA21	War	Var	Day	Own	Own	
62	420	Her JXC	KS	Uni	Wix	Zen	AC	Own	AL	AL	AL	B & B 11A6	Spi 1410	Ro-TA21	War	Var	Gun	Own	Own	
63	420	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	AL	B & B 12E	Spi 1410	Ro-TA21	War	Var	Gun	Own	Own	
64	509SCH	Her JXC	KS	Uni	Fram	Zen	AC	Own	AL	AL	AL	B & B 11A6	Spi 1410	Ro-TA26	Cla	Var	CB	Own	Own	
65	620	Her JXC	KS	Uni	Wix	Zen	AC	Own	AL	AL	AL	B & B 11A6	Spi 1410	Ro-TA21	War	Var	Gun	Own	Own	
66	620	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	AL	B & B 12E	Spi 1410	Ro-TA21	War	Var	Gun	Own	Own	
67	620	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	AL	B & B 12E	Spi 1410	Ro-TA21	War	Var	Gun	Own	Own	
68	614SC	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	AL	B & B 12E	Spi 1500	Ro-TA26	Cla	Var	Day	Own	Own	
69	614SC	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	AL	B & B 12E	Spi 1500	Ro-TA26	Cla	Var	Day	Own	Own	
70	620	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	AL	B & B 12E	Spi 1500	Ro-TA26	Cla	Var	Gun	Own	Own	
71	620	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	AL	LR 12ML	Spi 1500	Ro-TA26	Cla	Var	Gun	Own	Own	
72	650T	Con T8427	KS	Uni	Mic	Zen	AC	Own	AL	AL	AL	Roc 14TT	Spi 1500	Ro-TA26	Cla	Var	Gun	Own	Own	
73	702A	Her WXL	Pce	Uni	Mic	Zen	AC	Own	AL	AL	AL	Roc 14TT	Spi 1600	Ro-TA66	TS	Var	Gun	Own	Own	
74	660	Con T8427	KS	Uni	Mic	Zen 28ADA10	AC	Own	AL	AL	AL	Roc 14TT	Spi 1800	Ro TA66	Cla	Var	Gun	Own	Own	
75	720	Con T8427	KS	Uni	Mic	Zen 28ADA10	AC	Own	AL	AL	AL	Roc 14TT	Spi 1800	Ro TA66	TS	Var	CB	Own	Own	
76	722	Her TDXB	Pce	Uni	Mic	Zen 28ADA10	AC	Own	AL	AL	Exi	LR 14ML	Spi 1600	Ro TA66	TS	Var	CB	Own	Own	
77	920	Con R6572	Pce	Uni	Mic	Zen 29D13RP	AC	Own	AL	AL	AL	Roc 15TT	Spi 1600	Ro TA71	TS	Var	CB	Own	Own	
78	921R	Cum HB600	AB	Uni			AB	Own	DR	DR	AL	Roc 15TT	Spi 1600	Ro TA71	TS	Var	CB	Own	Own	
79	921R	Cum HRBB600	AB	Uni			AB	Own	DR	DR	AL	Spi 14TT	Spi 1700	Ro TA71	TS	Var	Day	Own	Own	
80	622	Con K6330	KS	Uni	Mic	Zen 28ADA10	AC	Own	AL	AL	AL	LR 13MLS	Spi 1500	Ro TA26	Cla	Var	Gun	Own	Own	
81	950	Cum NHRS	KS	Uni			AB	Own	DR	DR	AL	Spi 14MLS	Spi 1700	Ro TA71	TS	Var	CB	Own	Own	
82	951	Bud 6DA844	Bud	Uni			AB	Own	DR	DR	AL	Spi 14MLS	Spi 1700	Ro TA71	TS	Var	Bdd	Own	Own	
DODGE																				
83	B-3-B	Own T-306		AC		B&B DTE-1	Bla	AL	AL	AL	AL	B&B 11626	Spi 1260	Gem 305	Own	Own	Bdd	Det	Aos	
84	B-3-C	Own T-308		AC		B&B DTE-1	Jms	AL	AL	AL	AL	B&B 11626	Spi 1260	Gem 305	Own	Own	Edd	Det	Aos	
85	B-3-D	Own T-310		AC		BVX-3-3-100	F-Q	AL	AL	AL	AL	B&B 11625	UP 5160	Gem 305	Own	Own	3dd	Det	Aos	
86	B-3-DU	Own T-164		AC		BVX-3-3-100	Jms	AL	AL	AL	AL	B&B 11625	UP 5160	Gem 305	Own	Own	Bdd	Det	Aos	
87	B-3-EU	Own T-165		AC		BVX-3-3-100	Jms	AL	AL	AL	AL	B&B 11630	UP 5160	Gem B-60	Own	Own	Bdd	Det	Aos	
88	B-3-PW	Own T-137		Int		B&B E7-S-1	Fed	AL	AL	AL	AL	B&B 11626	UP 5160	Gem B-60	Own	Own	Bdd	Det	Aos	
89	B-3-F, B-3-G	Own T-314		Uni		B&B E7-T1	Fed	AL	AL	AL	AL	B&B 11627	Cleve, 096	Gem 335	Own	Own	Bdd	Det	Aos	
90	B-3-H, B-3-HH	Own T-316		Uni		B&B E7-T1	Fed	AL	AL	AL	AL	B&B 11630	Cleve, 096	Gem 335	Own	Own	Bdd	Det	Aos	
91	B-3-HM, B-3-HHM	Own T-326		Uni		B&B 6N-2	Fed	AL	AL	AL	AL	B&B 11630	Cleve, 096	Gem 335	Own	Own	Bdd	Det	Aos	
92	B-3-J, B-3-KA	Own T-318		Uni		B&B E7-T1	Fed	AL	AL	AL	AL	B&B 11630	UP 5370	Gem 335	Own	Own	Bdd	Det	Aos	
93	B-3-JM, B-3-KMA	Own T-330		Uni		B&B 6N-1	Fed	AL	AL	AL	AL	B&B 11630	UP 5370	Gem 335	Own	Own	Bdd	Det	Aos	
94	B-3-R	Own T-320		Uni		B&B E7-U2	Fed	AL	AL	AL	AL	B&B 11630	UP 5370	Gem 335	Own	Own	Bdd	Det	Aos	
95	B-3-T, B-3-V	Own T-322		Uni		B&B E7-U2	Bla	AL	AL	AL	AL	B&B 11732	Cleve, D-96	Gem 335	Own	Own	Bdd	Det	Aos	
96	B-3-Y	Own T-324		Uni		B&B E7-U2	Bla	AL	AL	AL	AL	B&B 11733	Cleve, U-96	Gem 375	Own	Own	Bdd	Det	Aos	
97	B-3-YX	Own T-325		Uni		B&B E7-U2	Bla	AL	AL	AL	AL	B&B 11927	Cleve, U-96	Ross TA66	Own	Own	Bdd	Det	Aos	
DUPLIX																				
98	TH	Her JXD				Zen 28AV11	AC	Own	AL	AL	WH	B&B 13 in.	Spi 1500	Ro TA27072		Tim	MW	Tut	Own	
99	TH339	Her JXL				Zen 29W14	AC	Own	AL	AL	WH	B&B 13 in.	Spi 1500	Ro TA27121		Tim	MW	Tut	Own	
100	GR-6	Her WXC3	Hof	AM	Mic	Zen 29W14	AC	Own	AL	AL	AY	B&B 13E	Spi 1600	Ro TA66	Own	Tim	Day	Tut	Own	
101	RH	Her WXL3				Zen 28AV12	AC	Own	AL	AL	AL	B&B 13 in.	Spi 1600	Ro TA67061		Tim	MW	Tut	Own	
102	KH, JH	Her RXC				Zen IN1675J	AC	Own	AL	AL	AL	B&B 14 in.	Spi 1600	Ro TA72243		Tim	MW	Tut	Own	
103	SH501	Her RXB				Zen IN1675J	AC	Own	AL	AL	AL	B&B 14 in.	Spi 1600	Ro TA72243		Tim	MW	Tut	Own	
104	LH	Her RXLD				Zen IN1675J	AC	Own	AL	AL	AL	LR 15 in.	Spi 1700	Ro TA72152		Tim	MW	Tut	Own	
105	LH56	HS 400				Zen 1510MVM2	AC	Own	DR	DR	AL	LR 15 in.	Spi 1700	Ro TA72152		Tim	MW	Tut	Own	
106	LH56	HS 480				Zen 1510MVM2	AC	Own	DR	DR	AL	LR 15 in.	Spi 1700	Ro TA72152		Tim	MW	Tut	Own	
FEDERAL																				
107	16M Series	Her QXLD		Uni	Pur	Car	AC	Lng	DR	DR	AL	B&B 11 in.	Spi 1300	Gem 335	War	D,M	BD	Det	Par	
108	16M Series	Her JXBF		Uni	Pur	Car	AC	Lng	DR	DR	AL	B&B 11 in.	Spi 1300	Gem 335	War	D,M	BD	Det	Par	
109	23M Series	Her JXCF		Uni	Fram	Car	AC	Lng	DR	DR	AL	B&B 12 in.	Spi 1400	Gem 335	War	D,M	BD	Det	Par	
110	23M Series	Her JXDF	K-S	Don	Fram	Car	AC	Lng	DR	DR	AL	B&B 12 in.	Spi 1500	Gem 335-3	Cla	D,M	BD			

COMPONENT PARTS Continued from Page 117

Line Number	TRUCK MAKE AND MODEL NUMBER	POWER PLANT ACCESSORIES					ELECTRICAL EQUIPMENT					CLUTCH Make and Model Number	UNIVER- SALS Make and Model Number	RUNNING GEAR				
		ENGINE Make and Model	Governor Make (If Standard)	Air Cleaner Make (If Standard)	Oil Filter Make (If Standard)	CARBU- RETOR Make and Model Number	Fuel Feed System Make	Radiator Make	Ignition System Make	Generator—Starter Make	Battery—Make			STEERING GEAR Make and Model Number	Hand Brakes Make & Type	Brake Drum Make	Wheels—Make	Springs—Make
FEDERAL—(Cont.)																		
114	80U Series	Con U6501	Zen	Don	Mic	Zen	AC	Lng	DR	DR	Exi	L-R 14 in.	Bld 1600	Gem 500	T-S	DM	BD	De
115	85M Series	Con R6802	Don	Don	Mic	Zen	AC	Lng	DR	DR	Exi	L-R 15 in.	Bld 1700	Gem 500	T-S	DM	BD	De
116	945M Series	Con T6427F	Don	Don	Mic	Zen	AC	Lng	DR	DR	Exi	L-R 14 in.	Bld 1600	Gem 400	TS	BD	BD	De
117	963M, 964M Series	Con R6802	Don	Don	Mic	Zen	AC	Lng	DR	DR	Exi	L-R 15 in.	Bld 1700	Gem 500	T-S	BD	Bdd	De
FORD																		
118	F-1, F-2, F-3, F-4, F-5, F-6, F-7, F-8	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own
FWD																		
119	LD	Her QXLD3	Hof	US		Zen 28AV11	AC	Mod	AL	DR	GL	B&B LD11	Spl 1410	Ro TA14	Own	Tim	Bdm	Own
120	HA	Wau 195GKA	Wau	Don	Fram	Zen 1N167SJ	AC	Pfx	DR	DR	Wii	WCL H13	Bld 5N	Ro TA66	Own	Own	Own	Own
121	HAY	Wau 195GKA	Wau	Don	Fram	Zen 1N167SJ	AC	Pfx	DR	DR	Wii	WCL H13	Bld 5N	Ro TA66	Own	Own	Own	Own
122	HR	Wau MZA	Wau	Don	Fram	Zen 1N167SJ	AC	Pfx	DR	DR	Wii	WCL H14	Bld 5N	Ro TA66	Own	Own	Own	Own
123	HRV	Wau MZA	Wau	Don	Fram	Zen 1N167SJ	AC	Pfx	DR	DR	Wii	WCL H14	Bld 5N	Ro TA66	Own	Own	Own	Own
124	HRC	Wau 140GKB	Wau	Don	Fram	Zen 29W14	AC	Pfx	DR	DR	Wii	WCL H15	Bld 5N	Ro TA66	Own	Own	Own	Own
125	HG	Wau MZA	Wau	Don	Fram	Zen 1N167SJ	AC	Pfx	DR	DR	Wii	WCL H14	Bld 5N	Ro TA66	Own	Own	Own	Own
126	HGY	Wau MZA	Wau	Don	Fram	Zen 1N167SJ	AC	Pfx	DR	DR	Wii	WCL H14	Bld 5N	Ro TA66	Own	Own	Own	Own
127	SU	Wau SRKR	Wau	Don	Fram	Zen 1N167SJ	AC	Pfx	DR	AL	Wii	B-L U14	Bld 6N	Ro TW74	Own	Own	Own	Own
128	SUD	GMC 471	GMC	Don	Fram	Zen 1N167SJ	Gmc	Pfx	DR	DR	Wii	WCL U15	Bld 6N	Ro TW74	Own	Own	Own	Own
129	AU	Wau 140GZ	Wau	Don	Fram	Zen 129-16	AC	Pfx	DR	DR	Wii	WCL U15	Bld 6N	Ro TW74	Own	Own	Own	Own
130	YU	Wau 140GK	Wau	Don	Fram	Zen 29W	AC	Pfx	DR	DR	Wii	WCL U15	Bld 6N	Ro TW74	Own	Own	Own	Own
131	UUD	GMC 471	GMC	Don	Fram	Zen 29W	Gmc	Pfx	DR	DR	Wii	WCL U15	Bld 6N	Ro TW74	Own	Own	Own	Own
132	ZU	Wau 140GZ	Wau	Don	Fram	Zen 129-16	AC	Pfx	DR	DR	Wii	WCL U15	Bld 6N	Ro TW74	Own	Own	Own	Own
133	ZUD	GMC 671	GMC	Don	Fram	Zen 129-16	Gmc	Pfx	DR	DR	Wii	WCL U15	Bld 6N	Ro TW74	Own	Own	Own	Own
134	M7G	Wau 145GK	Wau	Don	Fram	Zen 129W16	AC	Pfx	DR	DR	Wii	WCL M15	Bld 7N	Ro TW74	Own	Tim	Bdm	Own
135	M7D	Bud DA844	Bud	Don	Fram	Zen 129W16	Bud	Pfx	DR	DR	Wii	B-L M14	Bld 7N	Ro TW74	Own	Tim	Bdm	Own
136	M10G	Wau 145	Wau	Don	Fram	Zen 129W16	AC	Pfx	DR	DR	Wii	WCL M15	Bld 7N	Ro TW74	Own	Tim	Bdm	Own
137	M10D	Bud DA844	Bud	Don	Fram	Zen 129W16	Bud	Pfx	DR	DR	Wii	B-L M14	Bld 7N	Ro TW74	Own	Tim	Bdm	Own
138	H6X6G	Wau MZA	Wau	Don	Fram	Zen 1N167SJ	AC	Pfx	DR	DR	Wii	WCL H14	Bld 5N	Ro TA66	Own	Own	Own	Own
139	H6X6G	Wau 140GXB	Wau	Don	Fram	Zen 29W	AC	Pfx	DR	DR	Wii	WCL H15	Bld 5N	Ro TA66	Own	Own	Own	Own
140	H6X6D	GMC 471	GMC	Don	Fram	Zen 29W	Gmc	Pfx	DR	DR	Wii	WCL H15	Bld 5N	Ro TA66	Own	Own	Own	Own
141	H6X6G	Wau 140GKB	Wau	Don	Fram	Zen 29W	AC	Pfx	DR	DR	Wii	WCL H15	Bld 5N	Ro TA66	Own	Own	Own	Own
142	H6X6D	GMC 471	GMC	Don	Fram	Zen 29W	Gmc	Pfx	DR	DR	Wii	WCL H15	Bld 5N	Ro TA66	Own	Own	Own	Own
143	MU6X6G	Wau 145GK	Wau	Don	Fram	Zen 129W16	AC	Pfx	DR	DR	Wii	WCL H15	Bld 6N	Ro TW74	Own	Own	Own	Own
144	MU6X6D	GMC 671	GMC	Don	Fram	Zen 129W16	Gmc	Pfx	DR	DR	Wii	WCL H15	Bld 6N	Ro TW74	Own	Own	Own	Own
145	M6X6G	Wau 145GK	Wau	Don	Fram	Zen 129W16	AC	Pfx	DR	DR	Wii	WCL H15	Bld 7N	Ro TW74	Own	Own	Bdm	Own
146	M6X6D	Bud DA844	Bud	Don	Fram	Zen 129W16	Bud	Pfx	DR	DR	Wii	WCL H15	Bld 7N	Ro TW74	Own	Own	Bdm	Own
KENWORTH																		
147	821, 822, 823, 824, 848, 852, 884, 825	Cum HB600	Cum	Don	Cum		Cum	Pfx		DR	Exi	B-L 14 Sngl.	Spl 1700	Gem 500	T-S	Tim	Bdd	Own
148	885, 829	Wau 140GZP	Wau	Don	Mic	Zen 29W16	Cum	Pfx	DR	DR	Exi	B-L 14 Sngl.	Spl 1700	Gem 500	T-S	Tim	Bdd	Own
149	888	Cum-NHB	Cum	Don	Cum		Cum	Pfx		DR	Exi	B-L 14 Sngl.	Spl 1700	Gem 500	T-S	Tim	Bdd	Own
LINN																		
150	Linn A15, A25	Her JXE3	Hof	Dol		Zen 63AW10	AC	Yng	AL	AL	AL	LR 12ML	UP 5360	Ro TA26	NP	Eri	Bdd	LI
151	Linn A35, A45	Her JXC	Hof	Dol		Zen 63AW10	AC	Yng	AL	AL	AL	LR 12ML	UP 5360	Ro TA26	NP	Eri	Bdd	LI
MARMON-HERRINGTON																		
152	DVL4, R-32	Wys CJ-2A	Hof	Uni	Fram	Car 596S	AC	Yng	AL	DR	AL	B&B	Spl 1350	Ro TA15030	Own	Own	Bdd	Ser
153	LD7, RS, RA, RS, R6, RS-6, R6-6	Frd 8RT (239)	Frd	Frd	Frd	Frd	AC	Frd	Frd	Frd	Frd	Frd			Frd	Frd	Frd	Frd
154	Q5, Q6, Q5-6, Q6-6	Frd BEO (337)	Frd	Frd	Frd	Frd	AC	Frd	Frd	Frd	Frd	Frd			Frd	Frd	Frd	Frd
155	MH610	Her WXL	Hof	Her	Her	Zen 29-14	AC	Yng	DR	DR	AL	WCL	Spl 1500	Ro TA71	PS	Tim	Bdd	SS
156	MH615	Her WXL	Hof	Her	Her	Zen 29-14	AC	Yng	DR	DR	AL	WCL	Spl 1500	Ro TA71	PS	Tim	Bdd	SS
157	MH620	Her RXLC	Hof	Her	Her	Zen 29-14	AC	Yng	DR	DR	AL	WCL	Spl 1600	Ro TA71	PS	Tim	Bdd	SS
158	MH625	Her RXLC	Hof	Her	Her	Zen 29-14	AC	Yng	DR	DR	AL	WCL	Spl 1600	Ro TA71	PS	Tim	Bdd	SS
159	MH630	Her RXLDH	Hof	Her	Her	Zen 29W16	AC	Yng	DR	DR	AL	WCL	Spl 1600	Ro TA71	PS	Tim	Bdd	SS
MILFORD																		
160	QX	Wau 6MZA	Wau	AM	Mic	Zen 63AW12	AC	Pfx	DR	DR	Exi	L-R 14ML	Bld 6N	Ro TA71	AmC	Tim	Bdd	Tut
161	QY	Wau 140GK	Wau	Vor	Mic	Zen 63AW10	AC	Pfx	DR	DR	Exi	L-R 15ML	Bld 6N	Ro TW74	AmC	Tim	Bdd	Tut
OSHKOSH																		
162	W212	Her JXLD	Pce	Don	Mic	Zen 29AW14	AC	Own	DR	AL	Wii	LR 13SP	Spl 1500	Ro TA66	Tim	Own	Bdd	Tut
163	W-712-6X6	Her RXLDH	Pce	Don	Mic	Zen 29-D-13	AC	Own	AL	DR	Wii	LR 15SP	Spl 16, 1700	Ro TA71	Own	Tim	Bdd	Tut
164	W712	Her RXLDH	Pce	Don	Mic	Zen 29D13	AC	Own	AL	DR	Wii	LR 15SP	Spl 1600	Ro TA71	Own	Tim	Bdd	Tut
165	WA406	Cum HRB600	Cum	Don	AM		Cum	Own		DR	Wii	LR 15SP	Spl 1700	Ro TA71	Own	Tim	Bdd	Tut
166	WA1800BG	Bud 6MO893	Cum	Don	DeL	(10)	Cum	Own	(7)	DR	Wii	LR 15SP	Spl 17, 1800	Ro TA71	Tim	Own	Bdd	Tut
167	WA1800CD	Cum HB600	Cum	Don	AM		Cum	Own		DR	Wii	LR 15SP	Spl 17, 1800	Ro TA71	Tim	Own	Bdd	Tut
168	W1700	Her RXC	Pce	Don	Mic	Zen 29AW14	AC	Own	DR	DR	Wii	LR 14SP	Spl 1600	Ro TA71	Own	Tim	Bdd	Tut
169	W2201	Bud 6MO893	Cum	Don	DeL	Zen 63AW16	AC	Own	DR	DR	Wii	LR 15SP	Spl 1700	Ro TA71	Own	Tim	Bdd	Tut
170	W2206	HS 400	HS	Don	HS	Zen 150MWM2	AC	Own	DR	(9)	Wii	LR 152P	Spl 1700	Ro TA71	Own	Tim	Bdd	Tut
171	W2206	Cum NHB600	Cum	Don	AM		Cum	Own		DR	Wii	LR 15SP	Spl 1700	Ro TA71	Own	Tim	Bdd	Tut
172	W2209	CumNHRB600	Cum	Don	AM		Cum	Own		DR	Wii	LR 152P	Spl 1700	Ro TA71	Own	Tim	Bdd	Tut
PETERBILT																		
173	280, 350, 360, 370, 380	Cum HB600	Cum	Don	Cum		Cum	Pfx		DR	DR	BL 13, 14DP	Spl 1700	Ro TA71	TS	Tim	Bdd	US
174	390	Cum HB600	Cum	Don	Cum		Cum	Pfx		DR	DR	BL 13, 14DP	Spl 17, 1800	Ro TA71	TS	Tim	Bdd	US
REO																		
175	F-20	Own OA255	KS	Uni	Fram	Car BBR2-799S	AC	Fed	DR	DR	Wii	B&B 11A6	Spl 1410	Ro TA14	Own	MW	MW	SS
176	F-21	Own OA255	KS	Uni	Fram	Car BBR2-799S	AC	Fed	DR	DR	Wii	B&B 11A6	Spl 1410	Ro TA26	Own	MW	MW	SS
177	F-22	Own OA292	KS	Uni	Fram	Zen 28ADA10	AC	Mod	DR	DR	Wii	Lng 12CF	Spl 1500	Ro TA26	Own	MW	MW	SS
178	F-22R	Own OA331	KS	Uni	Fram	Zen 28ADA10	AC	Mod	DR	DR	Wii	Lng 12CF	Spl 1500	Ro TA26	Own	Day	SS	Own
179	F-22S	Own OA331	KS	Uni	Fram	Zen 28ADA10	AC	Mod	DR	DR	Wii	Lng 13 in.	Spl 1500	Ro TA70	Own	Day	SS	Own
180	F-23	Cont T6427	Huf	AM	Fram	Zen 29W16	AC	Mod	DR	DR	Wii	WCL 2325	Spl 1600	Ro TA70	Own	Bdd	SS	Own
181	F-23S	Own OA331	KS	Uni	Fram	Zen 28ADA10	AC	Mod	DR	DR	Wii	Lng 13 in.	Spl 1600	Ro TA70	Own	Bdd	SS	Own
182	F-23S	Cont T6T8427	Huf	AM	Fram	Zen 29W16	AC	Mod	DR	DR	Wii	WCL 2325	Spl 1600	Ro TA70	Own	Bdd	SS	Own
STERLING-WHITE																		
183	HD97, HD105, HA1401	Wau 6MZA	Wau	Don	DeL	Zen 1N167SJ	AC	Mod	DR	DR	Nat	LR 14 in. SP	Spl 1600	Ro TA71	Own	Tim	Bdd	Mar
184	DD115, HD115, HD145	Wau 6SRKR	Wau	Don	DeL	Zen 1N167SJ	AC	Mod	DR	DR	Nat	LR 14 in. SP	Spl 1600	Ro TA71	Own	Tim	Bdd	Mar
185	DD145	Wau 145GK	Wau	Don	DeL	Zen 29-16	AC	Mod	DR	DR	Nat	LR 15 in. SP	Spl 1700	Gem 500	Own	Tim	Bdd	Mar
186	HD115H, HD145H	Cum HB800	Cum	Don	AmL		Cum	Mod		DR	Nat	LR 15 in. SP	Spl 1700	Ro TA71	Own	Tim	Bdd	Mar
187	DD145H	Cum HB800	Cum	Don	Cum		Cum	Yng		DR	Nat	LR 15 in. SP	Spl 1700	Gem 550	Own	Tim	Bdd	Mar
188	HC97, HC105	Wau 6MZA	Wau	Don	DeL	Zen 1N167SJ	AC	Mod	DR	DR	Nat	LR 14 in. SP	Bld 60N	Ro				

Component Parts

Line Number		TRUCK MAKE AND MODEL NUMBER	POWER PLANT ACCESSORIES					ELECTRICAL EQUIPMENT					CLUTCH	UNIVERSALS	RUNNING GEAR				Frame—Make
			ENGINE Make and Model	Governor Make (If Standard)	Air Cleaner Make (If Standard)	Oil Filter Make (If Standard)	CARBURETOR Make and Model Number	Fuel Feed System Make	Radiator Make	Ignition System Make	Generator—Starter Make	Battery—Make			STEERING GEAR Make and Model Number	Hand Brakes Make & Type	Brake Drum Make	Wheels—Make	
STERLING WHITE—(Cont.)																			
183	HC175H, HC250H	Cum HBD600	Cum	Don	Cum	Zen IN167SJ	Cum	Mod	DR	Nat	LR 15 in. SP	Bld 70N	Gem 550	Own	Tim	Day	Mar	Par	
184	TB1301T	Wau 140GKB	Wau	Don	Del	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 14 in. SP	Spi 1600	Ro TA71	Own	Tim	Day	Mar	Par
185	TB1301TD	Cum HB600	Cum	Don	Del	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 15 in. SP	Spi 1700	Ro TA71	Own	Tim	Day	Mar	Par
186	TB1501T	Wau 140GZB	Wau	Don	Del	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 15 in. SP	Spi 1700	Ro TA71	Own	Tim	Day	Mar	Par
187	TB1501TD, TA1501TD, TA1511TD, TA1601D, TA1611D	Cum NHB600	Cum	Don	AmL	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 15 in. SP	Spi 1700	Ro TA71	Own	Tim	Day	Mar	Par
188	HA1101, HA1401	Wau 6MZA	Wau	Don	Del	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 14 in. SP	Bld 60N	Ro TA71	Own	Tim	Day	Mar	Par
189	HA1601, HA1701	Wau 6SRKR	Wau	Don	Del	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 14 in. SP	Spi 1600	Ro TA71	Own	Tim	Bdd	Mar	Par
190	HB2001	Wau 140GKB	Wau	Don	Del	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 14 in. SP	Spi 1600,1700	Ro TA71	Own	Tim	Bdd	Mar	Par
191	HB2001D	Cum HBD600	Cum	Don	AmL	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 15 in. SP	Spi 1700	Ro TA71	Own	Tim	Bdd	Mar	Par
192	HA1605, HA1805	Wau 6MZA	Wau	Don	Del	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 14 in. SP	Spi 1600	Ro TA71	Own	Tim	Bdd	Mar	Par
193	HB2205, HB2755	Wau 140GK	Wau	Don	Del	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 14 in. SP	Spi 1600,1700	Ro TA71	Own	Tim	Bdd	Mar	Par
194	HB2755D, HA2605D	Cum HBD600	Cum	Don	AmL	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 15 in. SP	Spi 1700	Gem 550	Own	Tim	Bdd	Mar	Par
195	TA2105D, TA2115D	Cum NHB600	Cum	Don	AmL	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 15 in. SP	Spi 1700	Ro TA71	Own	Tim	Bdd	Mar	Par
196	HA1502, HA1802, HA1803, HA1813, HB2002	Wau	Wau	Don	Del	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 14 in. SP	Bld 60N	Ro TA71	Own	Tim	Bdd	Mar	Par
197	HB2002D, HB2003D, HB2013D, HB2503D, HB2516D	Cum HBD600	Cum	Don	AmL	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 15 in. SP	Bld 70N	Ro TA71	Own	Tim	Bdd	Mar	Par
198	HB2003, HB2013	Wau 140GKB	Wau	Don	Del	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 14 in. SP	Bld 60N	Ro TA71	Own	Tim	Bdd	Mar	Par
199	HB2516	Wau 140GK	Wau	Don	Del	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 14 in. SP	Bld 60N, 70N	Ro TA71	Own	Tim	Bdd	Mar	Par
200	HB2756	Wau 140GKB	Wau	Don	Del	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 14 in. SP	Bld 60N, 70N	Gem 550	Own	Tim	Bdd	Mar	Par
201	HB2756D, HB3006D, HB3506D	Cum HBD600	Cum	Don	AmL	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 15 in. SP	Bld 70N	Gem 550	Own	Tim	Bdd	Mar	Par
202	HB4506D	Cum NHB600	Cum	Don	AmL	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 15 in. SP	Bld 70N, 73N	Ro P720	Own	Tim	Day	Mar	Par
203	SF6906D	Buda 8DA1125	Bud	Don	Bud	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 15 in. 2P	Spi 1700,1800	Ro P720	Own	Tim	Day	Mar	Par
204	SF7506D	Buda 8DAS1125	Bud	Don	Bud	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 15 in. 2P	Spi 1700,1800	Ro P720	Own	Tim	Day	Mar	Par
205	HB1204	Wau 6MZA	Wau	Don	Del	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 14 in. SP	Spi 1600	Ro TA71	Own	Tim	Bdd	Mar	Par
206	HA1304	Wau 6SRKR	Wau	Don	Del	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 14 in. SP	Spi 1600	Ro TA71	Own	Tim	Bdd	Mar	Par
207	HB1604	Wau 140GK	Wau	Don	Del	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 14 in. SP	Spi 1600,1700	Ro TA71	Own	Tim	Bdd	Mar	Par
208	HB1804	Wau 145GK	Wau	Don	Del	Zen 29-16	Cum	Mod	DR	DR	Nat	LR 15 in. SP	Spi 1700	Gem 550	Own	Tim	Bdd	Mar	Par
209	HB1904D	Cum HBD600	Cum	Don	AmL	Zen 29-16	Cum	Mod	DR	DR	Nat	LR 15 in. SP	Spi 1700	Gem 550	Own	Tim	Bdd	Mar	Par
210	HB2254	Wau 145GK	Wau	Don	Del	Zen 29-16	Cum	Mod	DR	DR	Nat	LR 15 in. SP	Spi 1700	Gem 550	Own	Tim	Bdd	Mar	Par
211	HB2254D	Cum NHB600	Cum	Don	AmL	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 15 in. SP	Spi 1700	Gem 550	Own	Tim	Bdd	Mar	Par
212	CC10	Wau 6MZA	Wau	Don	Del	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 14 in. SP	Bld 60N	Ro TW74	Own	Tim	Bdd	Mar	Own
213	CC20	Wau 140GK	Wau	Don	Del	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 14 in. SP	Bld 70N	Ro TW74	Own	Tim	Bdd	Mar	Own
214	DD5160	Wau 140GK	Wau	Don	Del	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 14 in. SP	Spi 1700	Ro TA71	Own	Tim	Bdd	Mar	Par
215	HW5160	Wau 6SRKR	Wau	Don	Del	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 14 in. SP	Spi 1700	Ro TA71	Own	Tim	Bdd	Mar	Par
216	HA2205	Wau 140GK	Wau	Don	Del	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 14 in. SP	Spi 1700	Ro TA71	Own	Tim	Bdd	Mar	Par
217	HW5235G	Wau 140GK	Wau	Don	Del	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 14 in. SP	Spi 1700	Gem 550	Own	Tim	Bdd	Mar	Par
218	HW5235	Wau 145GK	Wau	Don	Del	Zen 29-16	Cum	Mod	DR	DR	Nat	LR 15 in. SP	Spi 1700	Gem 550	Own	Tim	Bdd	Mar	Par
219	HW5160H	Cum HB600	Cum	Don	Cum	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 15 in. SP	Spi 1700	Ro TA71	Own	Tim	Bdd	Mar	Par
220	HW5235H	Cum HB600	Cum	Don	Cum	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 15 in. SP	Spi 1700	Gem 550	Own	Tim	Bdd	Mar	Par
221	HCS195	Wau 140GK	Wau	Don	Del	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 14 in. SP	Spi 1700	Ro TA71	Own	Tim	Bdd	Mar	Par
222	HCS265, HCS297, HCS330	Wau 145GK	Wau	Don	Del	Zen 29-16	Cum	Mod	DR	DR	Nat	LR 15 in. SP	Bld 70N	Gem 550	Own	Tim	Bdd	Mar	Par
223	HCS195H	Cum HB600	Cum	Don	Cum	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 15 in. SP	Spi 1700	Ro TA71	Own	Tim	Bdd	Mar	Par
224	HCS265H, HCS297H, HCS330H	Cum HBD600	Cum	Don	Cum	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 15 in. SP	Bld 70N	Gem 550	Own	Tim	Bdd	Mar	Par
225	HCS340H	Cum NHB600	Cum	Don	Cum	Zen IN167SJ	Cum	Mod	DR	DR	Nat	LR 15 in. SP	Spi 1600	Gem 550	Own	Tim	Day	Mar	Par
STUDEBAKER																			
226	2R5, 2R10	Own 1R	Own	Uni	Car BBR1633S	AC	McC	AL	AL	WII	B&B 9A7	Spi 1270	Ro TA12	Wag	Bdd	Bdd	MW	Own	
227	2R15	Own 2R	Own	Uni	Car BBR1633S	AC	McC	AL	AL	WII	B&B 9A7	Spi 1358	Ro TA14	War	MW	MW	Own	Own	
228	2R16A, 2R16B	Own 4R	Own	Uni	Car BBR1606SA	AC	McC	DR	DR	WII	ini "G"	Spi 1358	Ro TA14	War	MW	MW	Own	Own	
229	2R17A, 2R17B	Own 4R	Own	Uni	Car BBR1606SA	AC	McC	DR	DR	WII	ini "G"	Spi 1358	Ro TA14	War	MW	MW	Own	Own	
230	2R6, 2R11	Own 6R	Own	Uni	Car BBR1777SA	AC	McC	DR	DR	WII	ini "G"	Spi 1270	Ro TA12	War	Bdd	Bdd	Own	Own	
231	2R14	Own 6R	Own	Uni	Car BBR1777SA	AC	McC	DR	DR	WII	ini "G"	Spi 1358	Ro TA14	War	MW	MW	Own	Own	
WARD LA FRANCE																			
232	D1	Con T6427	Hof	Uni	Mar	Zen 29W16	AC	Pfx	AL	AL	AL	LR 14 in. SP	Bld 6N	Ro TA66	Tim	Day	Mar	Own	
233	D1C	Con T6427	Hof	Uni	Mar	Zen 29W16	AC	Pfx	AL	AL	AL	LR 14 in. SP	Bld 6N	Ro TA71	Tim	Day	Mar	Own	
234	D3, D3T3	Con R6672	Hof	Uni	Mar	Zen 29W16	AC	Pfx	AL	AL	AL	LR 15 in. SP	Spi 1700	Ro TA71	Tim	Day	Mar	Own	
235	D3S, D3ST6	Con R6602	Hof	Uni	Mar	Zen 29W16	AC	Pfx	AL	AL	AL	LR 15 in. SP	Spi 1700	Ro TA71	Tim	Day	Mar	Own	
236	D5, D5T2, D5T8	Cum HB600										LR 15 in. SP	Spi 1700	Ro TW74	Tim	Day	Mar	Own	
237	D6N	Cum NHB600										LR 15 in. SP	Spi 1700	Ro TW74	Tim	Day	Mar	Own	
238	D1T2	Con T6427	Hof	Uni	Mar	Zen 29W16	AC	Pfx	AL	AL	AL	LR 14 in. SP	Spi 16 or 1700	Ro TA71	Tim	Day	Mar	Own	
239	D6R	Cum HRB										LR 15SP	Spi 1700	Ro TW74	Tim	Day	Mar	Own	
240	D6RB	Cum HRBB										LR 14-2PI	Spi 1700	Ro TW74	Tim	Day	Mar	Own	
241	D6RBT7	Cum HRBB										LR 14-2PI	Spi 1700	Ro TW74	Tim	Day	Mar	Own	
242	D6RBT8	Cum HRBB										LR 14-2PI	Spi 1700	Ro TW74	Tim	Day	Mar	Own	
243	D6RT2	Cum HRB										LR 15SP	Spi 1700	Ro TW74	Tim	Day	Mar	Own	
244	D6RT7-8	Cum HRB										LR 15SP	Spi 1700	Ro TW74	Tim	Day	Mar	Own	
WHITE-FREIGHTLINER																			
245	WF-44, WF-42	Cum NHB600	Cum	Ver	Lub		Cum	Own	DR	AL	LR 15 in. DP	Spi 1700	Gem 500	TS	Own	Bdd	Own	Par	
WILLIS-OVERLAND																			
246	CJ-3A Jeep	Own	Oak	Fram	Car W0596S	AC	Har	AL	AL	AW	Aub 8501-23	Spi 1261	Ro T13108	Spi	Khm	Khm	Mat	Mic	
247	4-WD Truck	Own	Hof	Fram	Car YF	AC	Har	AL	AL	AW	Aub 8501-19	Spi 1261	Ro T13017	Ben	Khm	Khm	Mat	AOS	
248	473 Series	Own	Oak	F															

POWER RATINGS of

Showing maximum and net horsepower, maximum torque, weight

ENGINE MAKE AND MODEL	Number of Cylinders Bore and Stroke (In.)	MAX. BRAKE H.P. at R.P.M.		Piston Displacement (Cu. In.)	Compression Ratio	TORQUE		Engine Weight Without Carburetor or Ignition (Lb.)	ENGINE MAKE AND MODEL	Number of Cylinders Bore and Stroke (In.)	MAX. BRAKE H.P. at R.P.M.		Piston Displacement (Cu. In.)	Compression Ratio	TORQUE		Engine Weight Without Carburetor or Ignition (Lb.)	
		With Bare Engine	With Standard Accessories			Maximum Torque at R.P.M. (Lb. Ft.)					With Bare Engine	With Standard Accessories			Maximum Torque at R.P.M. (Lb. Ft.)			
GASOLINE																		
AUTOCAR																		
377	6-4x5	119-2800		377.0	6.00	288-1100 (BE)		1230	G. M. C.	6-3 1/2 x 3 1/2	100-3400	90-3200	228.0	6.75	182-1200 (BE)			
447	6-4 1/2 x 5 1/4	145-2700		447.0	6.00	353-1100 (BE)		1485		6-3 1/2 x 3 1/2	114-3600	104-3400	248.5	6.75	202-1200 (BE)			
501	6-4 1/2 x 5 1/4	165-2700		501.0	6.00	400-1100 (BE)		1527		6-3 1/2 x 4	120-3600	106-3200	269.5	6.75	222-1400 (BE)			
										360	6-4 1/2 x 4 1/2	155-3200	140-3000	360.8	6.50	297-1000 (BE)		
										426	6-4 1/2 x 5	177-3200	154-2800	425.6	6.50	342-1200 (BE)		
										503	6-4 1/2 x 5 1/2	200-3000	181-2800	502.7	6.50	422-1200 (BE)		
										270	6-3 1/2 x 4	107-3200	89-2800	269.5	6.75	212-1000 (BE)		
BRENNAN																		
75	6-3 1/2 x 4 1/2	90-3500	75-3300	230.3	6.70	175-1000 (EA)		710	HALL-SCOTT	6-4 1/2 x 5	157-2600	136-2600	477.1	6.00	375-1700 (BE)	1275*		
B-70	6-4x5 1/2	90-2000	75-2000	415.0	4.50	278-900 (EA)		800		(m) (H) 504	6-4 1/2 x 5	180-2500	162-2500	504.0	6.00	425-1600 (BE)	1275*	
B-100	6-4 1/2 x 5 1/2	94-2000	80-2000	496.0	4.50	350-1200 (EA)		875		(m) (H) 180-1-3-5	6-6x6	208-2200	188-2100	707.0	6.00	540-1500 (BE)	1786*	
BUDA																		
HP-326	6-3 1/2 x 4 1/4	78-2400	66-2400	326.0	5.40	220-1100 (BE)		885	(m) (H) 190-2-3-5	6-5 1/2 x 6	220-2200	200-2200	779.0	5.60	625-1300 (BE)	1786*		
K-428	6-4 1/2 x 4 1/4	107-2400	95-2400	428.0	5.33	276-1100 (BE)		905		6-5 1/2 x 6	235-2200	215-2200	779.0	6.00	640-1400 (BE)	1870*		
LO-525	6-4 1/2 x 5 1/2	157-2400	139-2400	525.0	5.00	400-1200 (BE)		1195		6-5 1/2 x 6	244-2200	216-2200	855.3	5.25	660-1600 (BE)	2190*		
6-MO-893	6-5 1/2 x 6	199-2000	170-2000	893.0	5.50	670-1000 (BE)		2400		6-5 1/2 x 6	274-2200	240-2200	934.8	5.70	800-1200 (BE)	2190*		
6-MO-970	6-5 1/2 x 6 1/2	200-1800	171-1800	970.0	5.43	720-800 (BE)		2400		6-5 1/2 x 7	296-2000	252-2000	1090.0	5.70	930-1300 (BE)	2190*		
CHEVROLET																		
1952	6-3 1/2 x 3 1/2	105-3600	98-3500	235.5	6.70	188-2000 (EA)		612	HERCULES	6-5 1/2 x 7	332-2200	308-2200	1090.0	6.40	960-1200 (BE)	2190*		
1952	6-3 1/2 x 3 1/2	100-3500	96-3400	235.5	6.70	187-2000 (EA)		603		6-5 1/2 x 6	260-2400	244-2400	855.0	6.00	680-1200 (BE)	2190*		
1952	6-3 1/2 x 3 1/2	92-3400	85-3300	235.5	6.70	176-1700 (EA)		603		6-5 1/2 x 6	295-2400	270-2400	935.0	6.40	800-1400 (BE)	2190*		
1952	6-3 1/2 x 3 3/4	92-3400	85-3300	216.5	6.60	170-1500 (EA)		603		ZXA	4-2 1/2 x 3	23-3800	19-3800	58.8	6.10	37-1800 (BE)	179*	
CONTINENTAL																		
F-4124	4-3x4 3/8	47-3200		124.0		94-1600 (BE)		395	ZXB	4-2 1/2 x 3	25-3800	21-3800	64.9	6.10	39-1800 (BE)	179*		
F-4140	4-3 1/2 x 4 3/8	52-3200		140.0		108-1600 (BE)		395		IXA	4-3x4	40-3200	34-3200	113.0	5.50	79-2000 (BE)	285*	
F-4162	4-3 1/2 x 4 3/8	58-3200		162.0		122-1600 (BE)		395		IXB	4-3 1/2 x 4	47-3200	40-3200	133.0	5.50	92-1800 (BE)	293*	
F-6186	6-3x4 3/8	77-3500		186.0	6.70	142-1600 (BE)		515		IXLB	4-3 1/2 x 4 1/2	49-3200	42-3200	141.0	6.50	96-1800 (BE)	293*	
F-6209	6-3 1/2 x 4 3/8	90-3500		209.0	6.70	160-1600 (BE)		515		JX4E	4-3 1/2 x 4 1/2	52-2900	44-2900	164.0	6.70	121-1400 (BE)	470*	
F-6226	6-3 1/2 x 4 3/8	99-3500		226.0	6.70	180-1600 (BE)		515		JX4C	4-3 1/2 x 4 1/2	60-2900	51-2900	188.0	6.70	139-1400 (BE)	470*	
M-6271	6-3 1/2 x 4 3/8	97-3000		271.0	6.70	209-1400 (BE)		755		JX4D	4-4x4 1/2	68-2900	57-2900	214.0	6.70	157-1400 (BE)	470*	
M-6290	6-3 1/2 x 4 3/8	108-3000		290.0	6.70	226-1400 (BE)		755		QXA	6-3 1/2 x 4 1/2	64-3200	54-3200	190.0	6.50	132-1300 (BE)	440*	
M-6330	6-4x4 3/8	125-3000		330.0	6.70	258-1400 (BE)		755		QXB	6-3 1/2 x 4 1/2	69-3200	59-3200	205.0	6.50	142-1400 (BE)	440*	
B-6371	6-4 1/2 x 4 3/8	123.5-3000		371.0	6.50	284-1400 (BE)		870		QXC	6-3 1/2 x 4 1/2	77-3200	66-3200	221.0	6.50	159-1400 (BE)	440*	
T-6371	6-4 1/2 x 4 3/8	144-3000		371.0	6.40	297-1400 (BE)		1070		QXD	6-3 1/2 x 4 1/2	78-4-3200	70-3200	230.0	6.50	167-1400 (BE)	440*	
B-8427	6-4 1/2 x 4 3/8	142-3000		427.0	6.50	328-1200 (BE)		875		QXLD	6-3 1/2 x 4 1/2	91-3200	77-3200	236.7	6.50	189-1400 (BE)	440*	
T-8427	6-4 1/2 x 4 3/8	166-3000		427.0	6.40	342-1400 (BE)		1075	JXE	6-3 1/2 x 4 1/2	91-3200	77-3200	245.0	6.50	184-1400 (BE)	590*		
U-6501	6-4 1/2 x 5 1/4	177-2600		501.0	6.20	414-1400 (BE)		1075	JXB	6-3 1/2 x 4 1/2	98-3200	83-3200	263.0	6.50	190-1400 (BE)	590*		
R-6513	6-4 1/2 x 5 1/4	180-2800		513.0	6.00	410-1200 (BE)		1525	JXC	6-3 1/2 x 4 1/2	103-3200	87-3200	282.0	6.50	207-1400 (BE)	590*		
R-6572	6-4 1/2 x 5 1/4	200-2800		572.0	6.00	450-1400 (BE)		1525	JXD	6-4x4 1/2	113-3000	96-3000	320.0	6.50	240-1200 (BE)	605*		
R-6602	6-4 1/2 x 5 1/4	212-2800		602.0	6.00	480-1400 (BE)		1525	JXLD	6-4x4 1/2	131-3200	111-3200	339.0	6.90	272-1400 (BE)	630*		
S-6749	6-5 1/2 x 5 1/2	250-2800		749.0	6.00	574-1400 (BE)		1885	WXG-3	6-4 1/2 x 4 1/2	131-2600	111-2600	383.0	6.60	296-1400 (BE)	820*		
K-6271	6-3 1/2 x 4 3/8	115-3200		271.0	6.40	216-1400 (BE)		850	WXL	6-4x4 1/2	123-2600	104-2600	358.0	6.60	275-1200 (BE)	825*		
K-6290	6-3 1/2 x 4 3/8	123-3200		290.0	6.40	232-1400 (BE)		850	WXLG-3	6-4 1/2 x 4 3/8	139-2600	118-2600	404.0	6.60	312-1300 (BE)	825*		
K-3330	6-4x4 3/8	145-3200		330.0	6.40	266-1800 (BE)		850	TXB	6-4 1/2 x 4 3/8	160-2600	136-2600	474.0	6.50	366-1400 (BE)	1230*		
S-6820	6-5 1/2 x 5 1/2	277-2800		820.0		628-1400 (BE)		1885	TXC	6-4 1/2 x 5 1/4	170-2600	146-2600	501.0	6.50	389-1400 (BE)	1230*		
DODGE																		
T-306, T-309	6-3 1/2 x 4 3/8	97-3600	86-3600	217.8	7.00	175-1600 (BE)		500	RXB	6-4 1/2 x 5 1/4	137-2400	116-2400	501.0	6.50	350-1200 (BE)	1010*		
T-310	6-3 1/2 x 4 3/8	103-3600	89-3400	230.2	7.00	190-1200 (BE)		525		RXC	6-4 1/2 x 5 1/4	143-2400	121-2400	529.2	6.50	372-1200 (BE)	1195*	
T-164, T-165	6-3 1/2 x 4 3/8	96-3600	87.5-3200	230.2	7.00	190-1200 (BE)		540		RXLC	6-4 1/2 x 5 1/4	146-2400	124-2400	529.2	6.20	408-1100 (BE)	1195*	
T-137	6-3 1/2 x 4 3/8	94-3200	82-3200	230.2	6.70	186-1200 (BE)		570		RXLD	6-4 1/2 x 5 1/4	154-2400	131-2400	558.0	6.50	430-1100 (BE)	1195*	
T-314, TX-314, TX-326, T-316, T-326	6-3 1/2 x 4 1/4	109-3600	91-3200	236.6	6.60	192-1200 (BE)		575		RXLDH	6-4 1/2 x 5 1/4	180-2600	153-2600	558.0	6.50	443-1400 (BE)	1470*	
T-316, TX-316, T-330, TX-330	6-3 1/2 x 4 1/2	114-3600	98-3200	250.6	6.60	204-1200 (BE)		590		HXB	6-5x6	159-2000	135-2000	707.0	5.75	502-900 (BE)	1810*	
T-320	6-3 1/2 x 4 1/2	122-3200	108-3200	306.0	6.46	245-1200 (BE)		850		HXC	6-5 1/2 x 6	175-2000	149-2000	779.0	5.75	555-900 (BE)	1810*	
T-322, TX-322, T-323	6-3 3/4 x 5	128-3030	111-2800	331.3	6.43	270-1200 (BE)		850		HXD	6-5 1/2 x 6	202-2000	172-2000	855.0	5.75	645-900 (BE)	1830*	
T-324, T-325	6-4x5	154-3000	140-2800	377.0	6.50	330-1200 (BE)		1050		HXE	6-5 3/4 x 6	227-2000	193-2000	935.0	6.20	750-1000 (BE)	1830*	
FORD																		
8MB	6-3 1/2 x 4.4	104-3000	86-3000	254.0	6.80	212-1200 (BE)		539		INTERNATIONAL	SD-220	6-3 1/2 x 3 1/2	100-3600	90-3600	220.5	6.50	167-1200 (EA)	607*
8RT	6-3 1/2 x 3 3/8	106-3500	96-3400	239.0	6.80	194-2000 (BE)		504			SD-240	6-3 1/2 x 4 1/2	108-3600	93-3400	240.3	6.50	186-1100 (EA)	607*
EAG	6-3 1/2 x 3 1/2	101-3500	91-3400	215.3	7.00	185-1500 (BE)		451	BD-269		6-3 1/2 x 4 1/2	100-3000	88-2800	269.1	6.30	216-1000 (EA)	781*	
EAL	6-3 1/2 x 3.5	145-3800	128-3600	279.0	7.00	244-2000 (BE)		892	RD-372		6-4 1/2 x 4 1/2	144-3200	128-2850	372.1	6.30	280-1000 (EA)	937*	
EAM	6-3 1/2 x 3.5	158-3900	141-3500	317.5	7.00	284-1800 (BE)		892	RD-406		6-4 1/2 x 4 1/2	154-3200	138-2750	405.9	6.30	314-1000 (EA)	942*	
8MTH	6-3 1/2 x 4.4	112-3500	101-3200	264.0	6.80	217-1550 (BE)		523	RD-450		6-4 1/2 x 5	162-3000	146-2600	451.0	6.20	354-1000 (EA)	948*	
LE ROI																		
H-540	8-4 1/2 x 3 1/4	206-3000		540.0	6.70	450-1800 (EA)		1350	MACK	6-3 1/2 x 4 3/8	112-3200	105-3200	290.0	6.90	225-1400 (EA)	910*		
EN291																		

TRUCK and BUS ENGINES

and piston displacement for both gasoline and diesel types

ENGINE MAKE AND MODEL	Number of Cylinders Bore and Stroke (In.)	MAX. BRAKE H.P. at R.P.M.		Piston Displacement (Cu. In.)	Compression Ratio	TORQUE		Engine Weight Without Carburetor or Ignition (Lb.)
		With Bare Engine	With Standard Accessories			Maximum Torque at R.P.M. (Ft. Lb.)		
MACK—Con't								
EN331	6-4x4½	130-3200	121-3200	330.0	6.90	256-1400 (EA)	920	
EN377	6-4x5	147-3200	132-3200	377.0	6.90	283-1400 (EA)	1056	
EN431A	6-4½x5½	147-2800	129-2800	431.0	6.32	326-1400 (EA)	1525	
EN510A	6-4½x5½	161-2600	143-2600	510.0	6.07	383-1000 (EA)	1555	
EN510A	6-4½x5½	161-2600	142-2600	510.0	6.07	366-1000 (EA)	1555	
ENF510A	6-4½x5½	161-2700	150-2700	510.0	6.34	398-1200 (EA)	1594	
EN707A	6-5x6	210-2500	193-2500	707.0	6.10	544-1100 (EA)	1803	
ENF377	6-4x5	147-3200	129-3200	377.0	7.20	312-1400 (BE)	1100	
ENF707B	6-5x6	225-2600	205-2600	707.0	6.42	579-1200 (BE)	1854	
REO								
OA-331	6-4½x4½	140-3200	128-3200	331.0	6.40	260-1200 (EA)	872	
OA-296	6-3½x4½	124-3300	110.5-3300	292.0	6.55	218-1400 (EA)	830	
OA-255	6-3½x4½	107-3400	93-3400	255.0	6.70	183-1200 (EA)	820	
WAUKESHA								
(a) FC	4-3½x4	32-2600	24-1800	133.0	5.58	86-1200 (BE)	290	
(a) XAH	4-3½x4½	43-2200	36-1800	185.0	5.50	120-900 (BE)	385	
190GL	6-3½x4	61-1800	61-1800	265.0	6.70	210-900 (BE)	1390	
6B2	6-4x4½	105-3000	89-3000	320.0	5.75	235-1000 (BE)	706	
140-GK	6-4½x5½	142-2250	127-2250	525.0	6.00	425-1000 (BE)	1390	
6SRK	6-4½x5½	126-2250	109-2250	517.0	5.50	369-600 (BE)	1225	
145-GK	6-5½x6	186-2000	172-2000	779.0	6.20	590-1200 (BE)	1810	
(a) 6WAK	6-6½x6½	235-1800	193-1300	1197.0	5.20	865-900 (BE)	3050	
145GZ	6-5½x6	220-2000	206-2000	817.0	6.00	615-1200 (BE)	1810	
6MZA	6-4½x4½	120-2800	113-2800	404.0	5.90	290-800 (BE)	920	
**140GKB	6-4½x5½	176-2800	159-2800	525.0	6.40	435-1000 (BE)	1390	
**140GZB	6-4½x5½	188-2600	171-2600	554.0	6.40	451-1000 (BE)	1390	
**145GKB	6-5½x6	225-2400	207-2400	779.0	6.20	595-1400 (BE)	1810	
180GL	4-3½x3½	36-2000	31-2000	144.0	6.80	105-800 (EA)	450	
**195GKA	6-4½x4	122-3000	110-3000	320.0	6.20	230-1600 (EA)	775	
195GK	6-4½x4	105-2400	96-2400	320.0	6.20	232-1500 (EA)	775	
135GZ	6-4½x5	150-2800	135-2800	451.0	6.00	320-1400 (EA)	.....
WHITE								
116A	6-3½x4½	110-3100	.....	298.0	6.68	230-1200 (BE)	1075	
120A	6-3½x4½	114-3000	.....	318.0	6.50	250-1200 (BE)	1070	
130A	6-4x4½	120-3000	.....	340.0	6.60	270-1200 (BE)	1075	
140A	6-3½x5½	125-3000	.....	362.0	6.03	285-1400 (BE)	1070	
150A	6-4x5½	135-3000	.....	386.0	6.48	315-1300 (BE)	1070	
260A	6-4½x5	170-2800	.....	451.0	6.25	350-1200 (BE)	1408*	
6-4½x5	6-4½x5	184-2800	.....	504.0	6.80	405-1200 (BE)	1442*	
(H)280TA	6-4½x5	175-2700	.....	504.0	6.00	400-1200 (BE)	1721	
(H)24AK	12-4½x4½	210-2700	.....	681.0	6.00	500-1200 (BE)	2690	
250A	6-4x5½	147-3000	.....	386.0	6.75	330-1200 (BE)	1075	
WILLYS								
CJ-3A	4-3½x4½	63-4000	.....	134.2	6.48	105-2000 (BE)	344	
473	4-3½x4½	72-4000	.....	134.2	7.40	114-2000 (BE)	390	
BUDA								
6BD-230	6-3½x4½	60-2400	52-2400	230.0	15.30	156-1400	860	
6BD-273	6-3½x4½	75-2400	65-2400	273.0	15.00	197-1300	1133	
6-DT-317	6-3½x4½	90-2300	75-2300	317.0	14.50	224-1500	1435	
6-DT-468	6-4½x5½	113-2000	97-2000	468.0	14.20	268-5-1100	2650	
6-DA-779	6-5½x6	185-2100	167-2000	779.0	14.20	540-1400	1640	
6-DA-844	6-5½x6½	215-2100	194-2000	844.0	14.20	640-1500	2650	
6DAS-844	6-5½x6½	280-2100	246-2000	844.0	12.80	780-1500	2975	
6DA-1125	6-5½x6½	288-2100	236-2000	1125.0	14.20	830-1300	2800	
6DAS-1125	6-5½x6½	350-2100	312-2000	1125.0	12.80	1040-1400	1840	
CONTINENTAL								
TD-6427	6-4½x4½	112-2400	.....	427.0	14.50	300-1200	1270	
RD-8572	6-4½x5½	150-2200	.....	572.0	14.10	400-1200	1785	
CUMMINS								
A-600	6-4x5	100-2200	85-2200	377.0	16.00	275-1200	1640	
H-600	4-4½x6	100-1800	83-1800	448.0	17.00	340-800	1840	
H-600	6-4½x6	150-1800	125-1800	672.0	17.00	500-800	2595	
(b)HS-600	6-4½x6	200-1800	175-1800	672.0	14.00	625-1400	2780	
NH-600	6-5½x6	200-2100	174-2100	743.0	15.50	535-1400	2680	
(b)NHS-600	6-5½x6	275-2100	240-2100	743.0	13.50	710-1600	2975	
HR-600	6-5½x6	165-1800	141-1800	743.0	15.50	540-1000	2600	
HR-600	4-5½x6	110-1800	94-1800	495.0	15.50	360-1050	1840	
(b)HRS-600	6-5½x6	225-1800	191-1800	743.0	13.50	695-1000	2780	
(b)NHS-600	6-5½x6	300-2100	255-2100	743.0	12.00	800-1400	2925	
NVH-1200	12-5½x6	400-2100	350-2100	1486.0	15.50	1075-1200	5500	
(b)NVHS-1200	12-5½x6	550-2100	480-2100	1486.0	13.50	1420-1600	5000	
JBS-600	6-4½x5	150-2500	.....	401.0	15.00	360-1400	1745	
HRBB-600	6-5½x6	175-2000	148-2000	743.0	15.50	505-1100	2650	
(H)NH-600	6-5½x6	200-2100	.....	743.0	15.50	535-1300	2285	
NHBB-600	6-5½x6	200-1800	.....	743.0	15.50	535-1200	2285	
FAGEOL								
LEYLAND								
600	6-4½x5½	160-2400	.....	597.0	15.75	455-1200	1625	
680	6-5x5½	180-2400	.....	677.0	15.75	504-1100	1625	
GENERAL MOTORS								
2-71	2-4½x5	.....	*65-2000	142.0	16.00	200-1200	770	
3-71	3-4½x5	.....	*110-2100	213.0	16.00	272-1700	.....
4-71	4-4½x5	.....	*150-2100	284.0	16.00	387-1800	.....
4-71	4-4½x5	.....	*225-2100	426.0	16.00	591-1600	.....
3-71	3-4½x5	.....	100-2000	213.0	16.00	300-1200	1245	
4-71	4-4½x5	.....	133-2000	284.0	16.00	400-1200	1380	
6-71	6-4½x5	.....	200-2000	426.0	16.00	600-1200	1685	
HERCULES								
D1X4B	4-3½x4	46-3000	39-3000	133.0	15.50	96-1500	600	
D1X4D	4-3½x4	57-3000	48-3000	165.0	15.50	120-1500	600	
DOOB	4-3½x4½	62-2600	53-2600	199.0	15.50	142-1400	750	
DOOC	4-4x4½	70-2600	60-2600	226.0	15.50	162-1400	750	
DOOD	4-4½x4½	79-2600	66-2600	255.0	15.50	182-1400	750	
D1X6D	6-3½x4	93-3000	79-3000	249.0	15.50	188-1800	800	
D1XB	6-3½x4½	77-2600	66-2600	260.0	15.50	179-1300	950	
D1XC	6-3½x4½	83-2600	71-2600	298.0	15.50	208-1300	950	
D1XH	6-3½x4½	99-2600	84-2600	298.0	15.50	234-1400	930	
DWXC	6-4x4½	120-2600	102-2600	358.0	15.50	284-1600	1350	
DWXD	6-4½x4½	135-2600	115-2600	404.0	15.50	320-1600	1350	
DWXID	6-4½x5	142-2600	121-2600	426.0	15.50	333-1600	1350	
DWXIDF	6-4½x5	142-2600	121-2600	426.0	15.50	319-1400	1325	
DRXB	6-4½x5½	134-2200	114-2200	474.0	15.00	358-1200	1600	
DRXC	6-4½x5½	147-2200	125-2200	529.0	15.00	395-1200	1600	
DFXB	6-5x6	190-2100	136-1600	707.0	14.80	530-1350	2500	
DFXC	6-5½x6	204-2100	173-2100	779.0	14.80	585-1350	2500	
DFXD	6-5½x6	217-2100	184-2100	855.0	14.80	645-1200	2500	
DFXE	6-5½x6	228-2100	194-2100	895.0	14.80	680-1200	2500	
DFXH, DFXHF	6-5½x6	260-2100	221-2100	935.0	14.80	750-1200	2600	
DNX-V8	8-6½x6	400-2100	340-2100	1468.0	14.80	1100-1200	4200	
MACK								
END-510	6-4½x5½	138-2400	120-2400	510.0	14.92	388-1400	1727	
END-672	6-4½x6	165-2000	154-2000	672.0	14.62	480-1200	1933	
ENDS 672	6-4½x6	222-2000	202-2000	672.0	13.18	640-1400	2204	
P & H								
187C	1-4½x5½	28-1400	27-1400	87.0	16.00	105-800	950	
287C	2-4½x5½	54-1400	53-1400	174.0	16.00	210-800	1030	
387C	3-4½x5½	83-1400	80-1400	261.0	16.00	315-800	1300	
487C	4-4½x5½	110-1400	105-1400	348.0	16.00	440-800	1550	
687C	6-4½x5½	165-1400	158-1400	522.0	16.00	630-800	1900	
SHEPPARD 12D, E & F								
6-4½x5	6-4½x5	100-2000	75-1800	426.0	18.00	325-1200	1790	
WAUKESHA								
180DAC	4-3½x3½	35-2400	28-2400	129.0	17.00	90-1400	520	
190DLC	6-3½x4	64-2200	53-1800	265.0	15.30	184-1200	.....
148DK	6-5½x6	168-2000	138-2000	779.0	17.50	830-1200	2150	
6WAK	6-6½x6½	225-1600	185-1600	1197.0	16.50	845-900	3400	
135DK	6-4½x5	136-2800	123-2800	426.0	17.50	320-1400	.....

paces. The engine will have a higher compression ratio, brake horsepower and torque.

(BE)—Bare engine.
(COE)—Cab over engine.
(EA)—Engine with standard accessories.

FC—Forward control.
(H)—Horizontal motor.

PASSENGER CARS

CHEVROLET (1952 Models)

DODGE (All 1952 Models)

FORD (All 1952 Models)

NASH (1952 Statesman)

PLYMOUTH (All 1952 Models)

PONTIAC (1952 6-Cyl. Models)

STUDEBAKER (1952 Champion)

CAPACITIES

MODEL	LUBRICANT CAPACITY				
	Engine Quarts	Transmission Pints	Rear Axle Pints	Steering Gear Pints	Cooling System Capacity Quarts
CHEVROLET	5½	11½	3½	1½	16
DODGE	5	22½	3½	1½	13
FORD (6 cyl.)	5	34	3½	1½	16
FORD (8 cyl.)	5	34	3½	1½	22
NASH (Statesman)	5	21½	3½	1½	14
PLYMOUTH	5	22½	3½	1½	13
PONTIAC (6 cyl.)	5	13½	3½	1½	18
STUDEBAKER (Champion)	5	16½	2½	1½	10

*—Includes oil filter. †—If Cylomatic, 3 pts. ‡—5½ qt. dry, 5 qt. refill. §—Synchronesh only.

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded	SAE Group No.	Chassis No.
CHEVROLET	100	15	Neg	IM	IM
DODGE	105	15	Pos	IH	IH
FORD (6 cyl.)	90	15	Pos		
FORD (8 cyl.)	90	15	Pos		
NASH (Statesman)	90	13	Pos	IM	
PLYMOUTH	100	15	Pos	IM	I
PONTIAC (6 cyl.)	100	15	Neg	2E	
STUDEBAKER (Champ.)	100	15	Pos	IH	I

TENSIONS

ENGINE MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
CHEVROLET	70-80	100-110A	40-50A
DODGE	C65-70	74-80	53-58
	N52-57		
FORD (6 cyl.)	65-70	95-105	45-50
FORD (8 cyl.)	65-70	95-105	45-50
NASH (States.)	57-60	66-70	27-30
PLYMOUTH	C65-70	74-80	53-58
	N52-57		
PONTIAC	60	95R	45
STUDEBAKER (Champion)	46-50	88-93	23-32

C—Cap screws. R—Rear main, 120 ft. lb. N—Nuts. A—With oiled threads.

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure, Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Flywheel Teeth °TC B-Before A-After	Conn. Pressure at Crankline Speed
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap				
CHEVROLET		6-3½x3¾	14@39	1°A		**	.006	.013	AC	46-5	14mm	.035	.018A	5°B	...	110
DODGE		6-3½x4½	40-50@20	8°B			.014	.008	AL	8	14mm	.035	.020	2°3	...	120
FORD (6 cyl.)		6-3.6x3.6	40-50@30	13°B			.010	.015	CH	H-10	14mm	.030	.025	TC	...	128
FORD (8 cyl.)		8-3.2x3¾	40@30-40	5°B			.010	.014C	CH	H-10	14mm	.030	.015	2°B	...	125
NASH (Statesman)		6-3½x4½	50@30	6°B			.019	.015	AL	A-7A	14mm	.030	.022	TC	...	120*
PLYMOUTH		6-3½x4½	45@45	12°B			.014	.010	AL	AR-8	14mm	.035	.020	2°B	...	120
PONTIAC (6 cyl.)		6-3½x4	40@40	5°B			.01C	.011	AC	44-5	14mm	.025	.022	8°B	...	127†
STUDEBAKER (Champion)		6-3x4	40@25-30	15°B			.020	.016C	CH	J-7	14mm	.025	.020	2°B	...	130‡

*—At cranking. †—At 200 R.P.M. C—Cold. A—With worn breaker lever. **—Use exhaust valve set to zero lash. ‡—At 150 R.P.M.

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
CHEVROLET	132	1.505	58	1.821
DODGE	115	1.375	42½	1.750
FORD (6 cyl.)	137	1.505	58	1.821
FORD (8 cyl.)	82½	1.600	41½	1.890
NASH (Statesman)	78½	1.438	39	1.750
PLYMOUTH	112½	1.375	42½	1.750
PONTIAC (6 cyl.)	101	1.593	60	1.906
STUDEBAKER (Champion)	93-103	1.3125	49-54	1.656

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
CHEVROLET	0-½	½±½	½±½	4½±½
DODGE	0-1	0-½	½±½	4½±½
FORD (All Models)	0-1	0-1b	½±½	4½±½
NASH (Statesman)	½±½	N½P½	0-1c	8½
PLYMOUTH	0-1	N½P½	N1-P1	5-6½
PONTIAC (6 cyl.)	0-1	0	N½	4½±½
STUDEBAKER (Champion)	½±½	0-1a	N1½	6

N—Negative. P—Positive. b—Not to vary more than ¼" from side to side. a—½" greater camber on left side. c—Not to vary more than ½" from side to side.

LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
CHEVROLET	20 above 32°	20W@-10° to 32°	10W@-10° to 10°*	90	90	90 Hyp	90 Hyp	A	A	▲
DODGE	30 above 32°	20W@-10° to 32°	10W@-10° to 10°†	10‡	10‡	90 Hyp	90 Hyp	90	90	Fib
FORD (All Models)	20W-20ab32°	10W@-10° to 32°		80 M	80 M	90 A	90 Hyp	90 M		Per
NASH (Statesman)	20W-20ab32°	10W below 32°		90	80	90 Hyp	90 Hyp	140 EP	140 EP	Per
PLYMOUTH	30 above 32°	20W@10° to 32°	10W@-10° to 10°†	10‡	10‡	90 EP	90 EP	90	90	Per
PONTIAC (6 cyl.)	20W abv. 32°	10W below 32°		80 EP	80 EP	90 EP	90 EP	B	B	Per
STUDEBAKER (Champion)	30@32° to 90°	20@10° to 32°	10W below 10°	90	90	90 Hyp	90 Hyp	MR	MR	CL

*—10% kerosene below -10° or SAE 5W. B—All-season steering gear lube. A—Multi-purpose gear lube. †—Below -10°, 5W. Per—Permanent. Fib—Heavy fiber universal joint grease. M—Mild EP. EP—Extreme pressure lube. CL—Chassis lube. ▲—Lubricated from transmission. *—80 EP below -10°. Hyp—Hypoid gear lube. MR—Manufacturer's recommendation.

1952

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Industry Statistics

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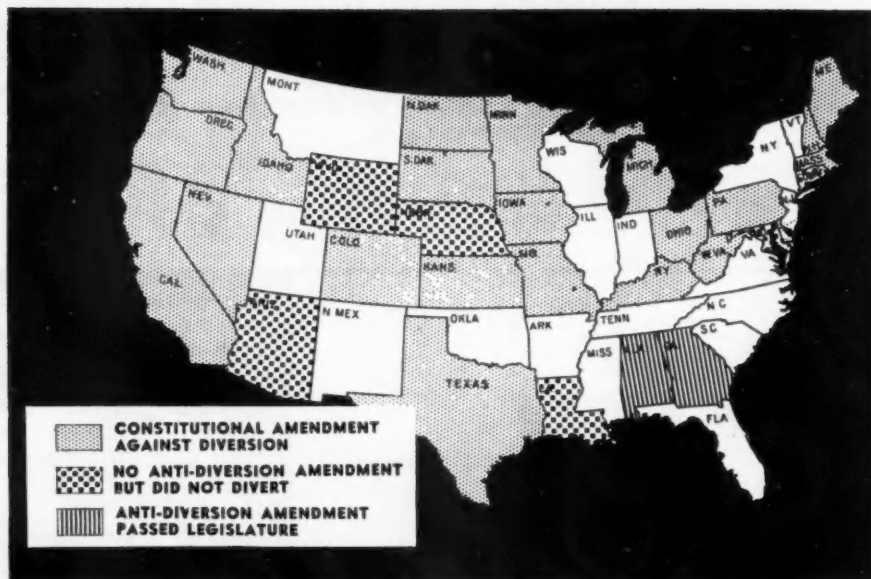
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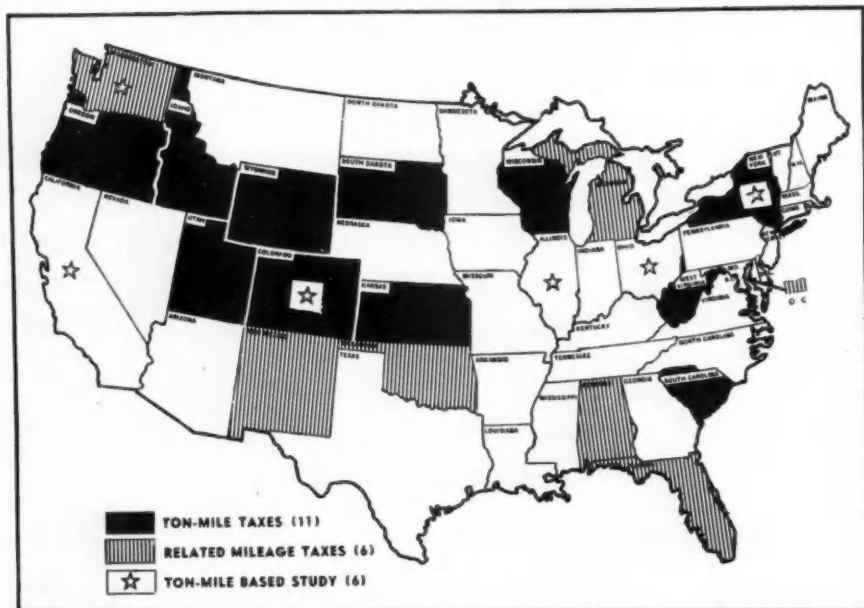
NO reference annual would be complete without a study of the industry from the standpoints of production, registrations, factory sales, transportation volume and the many other indexes to highway transportation progress. Here, in easy-to-read form are 27 carefully compiled tables and charts showing valuable information which should be in the hands of every fleetman.

17 States Wide Open to Diversion of Highway Funds



SOURCE: National Council of Private Motor Truck Owners, Inc.

18 States Now Have Mileage Taxes



SOURCE: National Council of Private Motor Truck Owners, Inc.

48 YEARS OF TRUCK AND BUS PRODUCTION*

Truck and Bus Factory Sales In Units and Their Value

Year	Units	Wholesale Value	Average Wholesale Price
1904.....	700	\$1,272,747	\$1,818
1905.....	750	1,330,000	1,773
1906.....	800	1,440,000	1,800
1907.....	1,000	1,780,000	1,780
1908.....	1,500	2,550,000	1,700
1909.....	3,297	5,333,683	1,618
1910.....	6,000	9,680,000	1,610
1911.....	10,681	21,600,000	1,998
1912.....	22,000	43,000,000	1,954
1913.....	23,500	44,000,000	1,872
1914.....	24,900	44,210,088	1,770
1915.....	74,000	125,800,000	1,700
1916.....	92,130	161,000,000	1,747
1917.....	126,157	220,982,668	1,724
1918.....	227,250	434,168,992	1,910
1919.....	224,731	371,422,820	1,653
1920.....	321,789	423,249,410	1,316
1921.....	148,052	166,070,810	1,122
1922.....	289,891	226,049,658	837
1923.....	409,295	308,537,929	754
1924.....	410,859	318,580,580	765
1925.....	530,859	450,400,277	844
1926.....	516,947	452,123,435	879
1927.....	464,793	420,130,624	904
1928.....	643,324	437,132,288	684
1929.....	771,020	566,020,644	734
1930.....	871,241	389,436,090	682
1931.....	416,648	262,417,642	630
1932.....	235,167	136,193,336	579
1933.....	346,545	166,069,314	537
1934.....	675,192	320,143,667	567
1935.....	694,690	379,407,751	548
1936.....	764,687	462,620,474	600
1937.....	693,065	334,494,673	608
1938.....	466,100	334,147,530	698
1939.....	710,499	494,629,231	698
1940.....	754,901	587,620,414	762
1941.....	1,080,820	1,089,799,855	1,009
1942.....	819,662	1,427,456,801	1,744
1943.....	699,669	1,451,794,475	2,078
1944.....	737,524	1,700,928,939	2,308
1945.....	855,683	1,181,955,532	1,803
1946.....	940,951	1,043,247,276	1,109
1947.....	1,239,842	1,708,622,000	1,378
1948.....	1,376,185	1,658,210,000	1,350
1949.....	1,134,136	1,407,435,000	1,241
1950.....	1,337,182	1,747,480,000	1,307
1951p.....	1,429,885	12,275,000,000	1,591
48 yrs.....	23,135,826	\$26,204,975,331	1,133

*—Automobile Manufacturers Association.
p—Preliminary.
†—Partly estimated by Automotive Industries.

MOTOR TRUCK FACTORY SALES BY G.V.W., 1946-1951*

Total Factory Sales from U. S. Plants

	5,000 lb. and Less		5,001-10,000 lb.		10,001-14,000 lb.		14,001-18,000 lb.		18,001-19,500 lb.		19,501-26,000 lb.		Over 26,000 lb.		Total	
	Units	% of Total	Units	% of Total	Units	% of Total	Units	% of Total	Units	% of Total	Units	% of Total	Units	% of Total	Units	% of Total
1951.....	590,095	41.5	260,454	18.3	99,426	7.0	278,180	19.6	68,937	4.9	61,073	5.7	42,254	3.0	1,420,419	100
1950.....	627,389	47.1	260,043	20.0	89,156	6.7	219,918	16.5	53,484	4.0	47,022	3.5	29,235	2.2	1,332,247	100
1949.....	612,148	45.5	279,359	24.8	84,605	7.5	173,137	15.3	37,227	3.3	23,798	2.1	17,351	1.5	1,128,625	100
1948.....	485,088	35.6	267,720	19.6	182,500	13.4	280,835	20.6	76,711	5.6	50,023	3.7	21,279	1.5	1,363,858	100
1947.....	375,445	30.8	182,490	14.9	285,989	21.8	285,589	23.4	41,806	3.4	42,761	3.5	26,754	2.2	1,220,634	100
1946.....	330,730	25.5	88,235	9.5	247,912	20.6	200,574	21.6	24,162	2.6	25,252	2.7	13,674	1.5	930,739	100

Factory Sales for Domestic Use

	5,000 lb. and Less		5,001-10,000 lb.		10,001-14,000 lb.		14,001-18,000 lb.		18,001-19,500 lb.		19,501-26,000 lb.		Over 26,000 lb.		Total	
	Units	% of Total	Units	% of Total	Units	% of Total	Units	% of Total	Units	% of Total	Units	% of Total	Units	% of Total	Units	% of Total
1951.....	517,873	43.3	229,065	19.2	84,183	7.0	199,967	16.7	53,598	4.5	72,339	6.0	39,060	3.3	1,196,085	100
1950.....	578,760	48.0	243,980	20.6	75,993	6.4	169,949	14.4	42,756	3.6	42,144	3.6	27,820	2.4	1,182,402	100
1949.....	489,255	47.0	256,035	25.9	70,969	7.1	135,004	13.6	28,396	2.8	19,780	2.0	15,569	1.6	997,608	100
1948.....	420,531	38.2	244,694	21.1	150,340	12.9	217,695	16.7	64,297	5.6	45,120	3.9	19,712	1.7	1,162,599	100
1947.....	314,662	32.4	166,707	17.0	197,275	20.3	196,708	20.4	34,660	3.6	36,723	3.8	23,873	2.5	971,605	100
1946.....	291,627	39.2	75,925	10.6	182,000	24.4	137,054	18.4	19,293	2.6	22,474	3.0	13,058	1.8	744,631	100

*—Automobile Manufacturers Association.

U. S. TRUCK PRODUCTION* By Months, by Years

	1951	1950	1949
January	128,244	93,542	105,595
February	112,456	90,106	102,967
March	137,623	111,042	116,273
April	136,234	104,120	107,068
May	140,789	121,378	87,686
June	135,656	135,926	99,623
July	110,909	111,635	95,639
August	122,776	135,341	100,796
September	110,096	108,016	91,882
October	111,914	109,399	85,523
November	94,012	99,124	73,857
December	89,163	119,553	97,067

Total 1,429,672 1,337,182 1,134,136

	1948	1947	1946
January	100,582	101,091	45,500
February	108,155	106,345	35,258
March	142,036	119,655	38,193
April	130,019	108,634	81,719
May	113,077	96,283	76,162
June	116,640	93,248	60,612
July	117,792	99,561	88,453
August	112,531	88,251	96,949
September	112,367	112,327	96,515
October	108,048	120,032	108,141
November	104,382	89,027	102,075
December	108,526	103,188	109,054

Total 1,376,155 1,239,642 940,830

	1945	1944	1943
January	67,394	58,827	49,612
February	64,510	55,916	47,546
March	75,057	56,695	55,979
April	67,579	56,071	56,173
May	71,267	57,287	55,190
June	66,456	61,470	56,516
July	54,583	61,921	60,285
August	44,779	69,015	61,321
September	31,572	65,605	57,582
October	42,225	64,723	60,160
November	53,634	69,497	57,168
December	29,542	72,165	59,583

Total 668,578 749,201 677,115

*-W.P.B. records for 1943 through 1945. Automobile Manufacturers Association 1946 through 1950.

FACTORY SALES OF SPECIAL TYPES OF VEHICLES*

Vehicle Type	1951	Units
Station Wagons(1)	194,589	
Motor Coaches(2)	9,452	
School Bus Chassis	31,691	
Trucks with Cab-Over-Engine	25,482	
Trucks with Diesel Engines	16,494	
Trucks with 6 Wheels, 3 Axles	36,429	
Multi-Stop Trucks	28,667	
Ambulances and Funeral Vehicles	4,177	
1950		
Station Wagons(1)	159,944	
Motor Coaches(2)	4,906	
School Bus Chassis	19,953	
Trucks with Cab-Over-Engine	22,370	
Trucks with Diesel Engines	13,903	
Trucks with 6 Wheels, 3 Axles	15,719	
Multi-Stop Trucks	21,681	
Ambulances and Funeral Vehicles	2,971	
1949		
Station Wagons(1)	104,613	
Motor Coaches(2)	5,511	
School Bus Chassis	13,696	
Trucks with Cab-Over-Engine	13,325	
Trucks with Diesel Engines	6,047	
Trucks with 6 Wheels, 3 Axles	4,122	
Multi-Stop Trucks	19,479	
Ambulances and Funeral Vehicles	2,853	
1948		
Station Wagons(1)	110,312	
Motor Coaches(2)	12,289	
School Bus Chassis	23,785	
Trucks with Cab-Over-Engine	31,047	
Trucks with Diesel Engines	5,698	
Trucks with 6 Wheels, 3 Axles	5,764	
Multi-Stop Trucks	21,380	
Ambulances and Funeral Vehicles	4,727	
1947		
Station Wagons(1)	91,973	
Motor Coaches(2)	19,110	
School Bus Chassis	30,431	
Trucks with Cab-Over-Engine	32,603	
Trucks with Diesel Engines	6,209	
Trucks with 6 Wheels, 3 Axles	15,876	
Multi-Stop Trucks	3,746	
Ambulances and Funeral Vehicles		

(1)-Includes those built on both passenger and truck chassis.

(2)-Does not include non-integral school buses.

*-Automobile Manufacturers Association.

New Registrations

NEW TRUCK REGISTRATIONS*

by MAKES, by G.V.W.—1948-1951

AUTOCAR

BROCKWAY

CHEVROLET

CROSLY

DIAMOND T

DIVCO

DODGE

FEDERAL

FORD

F.W.D.

G.M.C.

INTERNATIONAL

KENWORTH

MACK

PONTIAC

REO

STERLING

STUDEBAKER

WHITE

WILLYS-JEEP

WILLYS-TRUCK

ALL OTHERS

TOTAL

% OF TOTAL

Year	5,000 lb. and less	5,001-10,000	10,001-14,000	14,001-16,000	16,001-19,500	19,501-26,000	Over 26,000	Total
1951							2,112	2,112
1950							2,072	2,072
1949							1,655	1,655
1951				2	117	329	1,734	2,182
1950				17	168	422	1,777	2,384
1949				166	128	631	701	1,628
1951	191,347	70,834	20,579	67,594				350,344
1950	228,865	89,000	26,667	69,984				414,496
1949	179,489	89,622	26,890	49,518				345,519
1951								
1950	422							422
1949	871							871
1951		138	176	795	1,567	1,257	555	4,608
1950		611	1,267	668	1,490	1,164	475	5,678
1949		1,025	1,507	1,217	621	553	349	5,172
1951		3,168	584					3,752
1950		4,121	188					4,309
1949		3,168	409					3,577
1951	50,712	25,352	6,457	14,223	8,528	879	449	106,600
1950	47,344	25,577	5,003	13,012	7,554	931	295	99,718
1949	52,666	32,398	50	20,945	9,482	1,212	3	116,956
1951			20	139	268	448	133	1,008
1950			31	370	331	629	108	1,489
1949			60	467	266	357	75	1,228
1951	117,934	43,964	29,398	44,627	5,919	8,760		250,802
1950	164,027	58,659	31,458	45,997	6,541	9,230		315,912
1949	99,044	35,909	30,387	25,901	6,795	4,143		202,179
1951				22	70	372	37	501
1950					29	268	26	323
1949					27	227	63	337
1951	40,948	18,319	5,435	18,038	6,699	8,142	2,704	100,285
1950	42,152	19,741	9,877	11,549	5,650	5,720	2,511	97,200
1949	34,431	18,616	8,966	8,375	5,245	2,048	2,726	80,407
1951	28,168	18,829	3,652	19,864	10,697	10,034	3,742	95,184
1950	25,670	21,018	3,182	22,067	12,703	10,498	2,710	97,818
1949	20,803	25,647	575	26,100	9,540	7,079	1,620	91,164
1951							2	668
1950							50	623
1949							392	392
1951				3	1,008	2,847	5,948	9,794
1950				273	832	1,737	7,068	9,908
1949				654	741	1,828	3,645	6,868
1951	908							908
1950	1,382							1,382
1949	775							775
1951				956	657	1,760	52	3,427
1950				1,233	1,042	1,559	32	3,876
1949				2,281	1,304	327	81	4,003
1951						74	200	334
1950						63	291	354
1949						16	213	229
1951	20,644	5,486	4,056	2,509				32,676
1950	26,649	8,772	6,309	4,151				45,881
1949	25,159	14,790	9,279	5,073				54,301
1951				912	947	8,276	2,125	12,260
1950				551	1,235	8,135	2,129	12,060
1949				543	1,305	5,173	1,297	8,318
1951	9,002							9,002
1950	8,841							8,841
1949	14,472							14,472
1951	9,091	6,190						15,280
1950	10,875	4,924						15,799
1949	9,264	9,009						18,293
1951	873	8	21	24	3	381	907	2,214
1950	364	32	66	17	31	289	988	1,767
1949	1,362	111	259	24	222	239	649	2,828
1951	469,895	192,274	70,378	109,900	36,790	43,561	21,322	1,003,850
1950	556,571	232,465	84,018	169,869	37,606	40,695	21,063	1,142,307
1949	438,316	230,293	78,382	142,064	35,576	23,831	13,499	961,961
1948	379,674	223,065	156,954	173,102	40,264	35,107	16,008	1,035,174
1951	46.80%	19.15%	7.01%	16.82%	3.66%	4.34%	2.12%	100.00%
1950	48.72%	20.35%	7.36%	14.67%	3.29%	3.66%	1.85%	100.00%
1949	45.58%	23.94%	8.15%	14.77%	3.70%	2.48%	1.40%	100.00%
1948	36.68%	21.55%	15.16%	16.72%	4.76%	3.39%	1.74%	100.00%

* Based on data from R. L. Polk & Co.

Δ Included in All Others.

1951 NEW TRUCK REGISTRATIONS

by Makes by States*

STATE	Auto-car	Brookway	Chevrolet	Diamond T	Divco	Dodge	Federal	Ford	FWD	GMC	International	Kenworth	Mack	Peterbilt	Reo	Sterling	Studebaker	White	Willys	All Others	Total	
Alabama	11	1	9031	20	26	2297	11	6187	1	2389	1619		174		38		840	223	399	27	23,294	
Arizona	14	2	2432	13	14	779	8	1897		877	904	16	22	6		2	237	73	223	39	7,079	
Arkansas	2		7888	17		1790	1	5300	2	2782	1536		40		31		787	105	323	13	20,617	
California	209	8	20258	425	337	8692	35	15123	105	7904	4830	247	422	253	135	119	2209	594	1324	155	83,284	
Colorado	22		4812	23	47	1067	11	3186	8	1412	1164	22	48		34		423	45	511	34	12,661	
Connecticut	68	67	2569	96	93	975	46	1818	1	617	828	15	15		74	11	241	133	256	28	8,229	
Delaware	6	14	941	12	5	277		836	1	188	290		310		12		89	21	31	10	2,748	
District of Columbia	10	3	1022	25	42	297	6	610		363	303		22		20		23	41	72	11	2,870	
Florida	15	2	7429	143	74	2983	4	6423	2	1836	1589		337		113		1172	239	1018	120	22,499	
Georgia	2	7	11327	28	16	2791	6	8173	2	2838	2063	1	260		59	2	1261	255	405	53	29,549	
Idaho			2384	48	5	729	13	1736	1	1205	871	47	60	2	18	1	336	46	548	7	8,036	
Illinois	58	6	18919	619	223	5563	31	10285	7	3934	5350	1	286		144	29	1148	636	798	167	45,205	
Indiana	11	3	10078	110	91	3257	25	7286	6	2084	3873	1	193		117		1459	840	529	75	49,205	
Iowa	1		7820	107	35	1979	3	6092	1	1631	3270	1	59		35		683	177	292	45	22,321	
Kansas			7383	56	39	1628	8	4931	5	1914	2346	1	19		19		585	131	441	21	19,522	
Kentucky	11		7097	84	26	1852	10	4918	2	1899	1739		57		31		646	94	709	32	19,887	
Louisiana	18		7295	89	13	1423	1	5799	8	2148	1357		41		8		807	82	368	14	19,467	
Maine	9	14	1884	5	5	467	10	1449		626	843		123		2		214	58	204	11	5,824	
Maryland	37	73	3725	18	92	1369	57	2723	1	1015	1167		200		59	6	263	159	197	26	11,187	
Massachusetts	194	102	4421	110	163	1775	39	3651	8	1217	1342		352		140	49	420	364	301	49	40,840	
Michigan	82	2	14439	115	263	4649	90	13118	1	3335	2594		217		289		806	325	525	85	40,936	
Minnesota	5		6521	74	45	2135	1	5424	23	1590	2669	19	71		36	1	823	146	391	70	20,044	
Mississippi			7966	5		1579	8	5160	1	2980	1828		71		3		707	68	433	15	20,534	
Missouri	13		12791	69	106	3470	4	6251	3	3820	2772		120		70	3	934	545	434	46	33,461	
Montana	1		2854	45	5	608	4	2084	4	938	1162	25	38	8	47		324	49	668	6	8,886	
Nebraska	5	1	6029	154	16	1065		4267	11	1792	2142	33	61		41		588	148	550	23	16,822	
Nevada			584	5		198		395	1	365	174		1		3		62	4	61	1	1,874	
New Hampshire	12	13	1045	6	17	327	3	806	2	300	315		89		16	1	121	24	138	16	3,249	
New Jersey	191	379	8298	148	271	2731	90	5881	13	2173	2044		827		111	25	553	508	642	87	24,870	
New Mexico	4		2472	5	1	522		1419	3	988	460	2	42	2	31		305	17	215	13	5,501	
New York	365	778	15819	549	412	6480	125	10888	48	4008	4828		1502		543	30	1034	1198	1220	335	49,640	
North Carolina	74	4	10642	35	81	2678	8	7447	1	3022	2323		428		44	3	1200	300	521	282	29,093	
North Dakota			2252	11	5	629	7	1957		576	1320		1		3		270	4	213	4	7,282	
Ohio	111	16	14849	252	357	5183	69	11532	15	3541	4769		489		267		1460	1211	1199	147	45,467	
Oklahoma	3		8621	8	55	2099	3	5797	41	2109	2122	9	47		43		654	267	354	38	22,270	
Oregon	20		4360	85	40	1761	19	2953	1	1797	1585	87	224	17	28	9	436	171	980	63	14,636	
Pennsylvania	275	593	16834	302	233	7304	125	12279	16	4314	5739		1186		257	29	1441	1061	1191	204	63,383	
Rhode Island	73	8	882	17	24	325		819		202	285		62		3	2	94	65	52	13	2,826	
South Carolina	15	1	6557	13	18	1371		3502	2	1376	976		145		8		512	121	152	25	14,794	
South Dakota			1998	43	2	661	2	1647		636	1328	3	9		11		293	20	323	4	6,980	
Tennessee		9	8101	25	35	2315	19	5654		2445	1793		153		12		745	209	305	34	21,854	
Texas	81		33503	197	137	8189	9	22604	8	10908	6734	11	414		183		3021	925	1640	139	88,701	
Utah			2030	32	27	394	14	1348	2	795	596	24	35	8	24		148	51	198	17	5,743	
Vermont	1	7	876	10	2	218	4	566	3	302	328		30		15		69	10	241	13	2,093	
Virginia	59	38	7971	44	90	2210	20	5688	54	1865	2114		359		40		742	254	493	37	22,082	
Washington	4		4224	98	49	1899	2	2999	7	1684	1572		109	133	7	54	7	414	185	619	75	14,141
West Virginia	4	31	3864	14	29	1312	29	2741	9	1141	849		89		28		293	102	695	21	11,082	
Wisconsin	20		7395	100	66	2104	24	5178	77	1884	2765	1	99		95	6	635	234	414	68	21,105	
Wyoming			1862	19		393		1088		620	616	8	15		10		148	26	461	3	5,089	
Total—1951	2112	2182	350344	4508	3752	106600	1008	250802	501	100285	95184	668	9794	301	3427	334	32675	12260	24292	2821	1,003,880	
Total—1950	2072	2384	341496	5675	4309	99716	1469	315912	323	97200	97818	673	9908		3876	354	45881	12050	24640	3551	1,142,307	

* Data from R. L. Polk & Co.

NEW TRUCK REGISTRATIONS

by Makes, by Years*

	1951	1950	1949	1948	1947	1946
Autocar	2,112	2,072	1,865	2,770	4,334	4,785
Brookway	2,182	2,384	1,824	2,968	4,258	5,683
Chevrolet	380,344	414,486	345,619	302,219	238,903	171,616
Crosley		422	871	2,411		
Diamond T	4,508	8,875	8,172	10,687	10,476	8,083
Divco	3,782	4,309	3,577	5,610	4,893	3,734
Dodge	108,000	99,716	116,956	114,431	126,736	96,480
Federal	1,008	1,468	1,225	4,026	9,020	4,657
Ford	260,802	316,912	202,178	225,759	166,414	131,466
F. W. D.	601	328	337	811	1,165	585
G. M. C.	100,265	97,200	80,407	74,887	49,187	25,845
International	88,194	87,810	81,194	128,203	113,161	78,382
Kenworth	8,784	8,906	8,688	9,768	10,617	4,687
Mack						
Olds				178	248	
Phoenix						
Pontiac	3,427	3,476	4,005	70,778	12,911	10,488
Reo						
Sterling	384	384	229	411	579	510
Studebaker	35,875	45,861	85,096	86,857	41,861	28,880
Ward La France				271	809	
White	12,780	12,050	9,310	11,905	13,099	10,117
Willis-John	9,002	8,841	14,472	28,984	47,812	42,188
Willis-Truck	15,290	15,799	18,293	27,940	2,207	
All Others	2,274	1,767	2,620	2,722	8,724	3,588
Total	1,003,880	1,142,307	961,661	1,058,174	876,192	625,249

* Excluded with "All Others."
* Data from R. L. Polk & Co.

NEW TRUCK REGISTRATIONS

by Years*

Year	Units
1927	327,908
1928	341,123
1929	827,077
1930	418,680
1931	313,064
1932	180,418
1933	248,009
1934	403,088
1935	510,663
1936	611,641
1937	618,248
1938	568,346
1939	486,740
1940	509,180
1941	646,667
1942	78,460
1943	60,460
1944	101,000
1945	306,887
1946	625,249
1947	876,192
1948	1,058,174
1949	961,661
1950	1,142,307
1951	1,003,880

Source: 1928 through March, 1942, and 1946 and later years compiled by R. L. Polk & Co. April, 1942 through July, 1945 data are W.P.B. and O.D.T. and represent certification of transfer issued to civilian users.

New Registrations

1952 NEW TRUCK REGISTRATIONS, BY MAKES BY STATES*

for January, 1952

STATE	Auto-car	Brock-way	Chevrolet	Diamond T	Divco	Dodge	Federal	Ford	FWD	GMC	International	Ken-worth	Mack	Peter-bilt	Reo	Sterling	Stude-baker	White	Willys	All Others	Total
Alabama			512	4	1	151		203		132	95		8		3		39	18	35		1,201
Arizona			125		1	61		94		52	41		5		2		14	12	9		416
Arkansas			603			139		263		189	112		2				45	2	20		1,377
California	10	3	1268	24	32	703	1	734	22	495	437	27	21	8	9	1	164	67	113	22	4,161
Colorado			215	1	3	73	1	170	2	89	108		8				18	2	38	4	732
Connecticut	4	5	127	9	8	66	1	103		39	60		13				18	6	11	9	486
Delaware	1		82		3	19		78		19	22						8	2	1	1	236
District of Columbia	1		62		1	20		35		7	16				3		1		1	1	148
Florida	12		483	7	6	266		407		100	129		27		9		96	40	69	12	1,671
Georgia			834		4	322		584		239	199		20		3		121	26	35	5	2,392
Idaho			116			41	1	98		56	60		3			3	15	2	37	1	433
Illinois	31		959	27	26	435	2	634	1	258	411		9		7		86	60	47	13	2,996
Indiana	1		480		4	219		294	1	105	222		7		6		96	47	19	3	1,513
Iowa			429	5	1	134	1	275		90	206		3		1		51	13	35	6	1,250
Kansas			310	1	2	105		238		92	153		2		3		33	8	24		671
Kentucky			415	4		134	1	198		142	128		1		1		54	6	48	5	1,135
Louisiana			277		6	81		186		88	60						30	5	7	1	741
Maine		1	122		1	45	1	102		61	47		6		1		15	3	14	4	423
Maryland	2	2	245		1	103	1	161		46	92		15		1		20	12	12	12	731
Massachusetts	14	10	245	12	5	132	2	202	1	81	117		25		9	5	40	27	17	5	949
Michigan	3		755	8	18	339	5	606		218	188		8		21		58	16	28	20	2,269
Minnesota			362	3	2	117		260	5	82	143		2		4		35	9	18	4	1,048
Mississippi			448		2	133		201		190	90				1		50	4	19	3	1,141
Missouri			604	5	23	216		376		182	187		7		1		55	15	25	3	1,699
Montana			81	2		29	1	82	1	25	60				2		18	1	32		336
Nebraska			272	11	3	66	1	199	1	133	155	2	9		3		30	15	41	1	942
Nevada			25			28		10		13	13						3		8		100
New Hampshire	1		48		1	16		30	2	14	20		5		1		4	10			158
New Jersey	4	17	404	8	21	183	1	298	5	146	165		30		7	2	32	33	37	4	1,397
New Mexico			116			27		88		39	48		9		4		14	9	16	1	369
New York	23	33	828	53	14	595	10	611	5	264	337		94		41	4	61	57	68	38	2,936
North Carolina	1		711	5	7	313		433		155	224		18				87	39	28	16	2,239
North Dakota			141	1		49		140	1	42	155				1		23		25		577
Ohio	4		742	14	17	373	3	560		222	336		25		28		110	93	85	18	2,630
Oklahoma			333	1		126		207	1	79	88		6		3		21	20	20		905
Oregon			201	10	5	96	6	158		70	74	8	14	3	1		14	6	30	5	703
Pennsylvania	15	29	790	14	4	371	4	524		183	303		40		15	2	71	69	53	11	2,504
Rhode Island	1	6	47		2	29		50		4	27		6				5	5	5		187
South Carolina			453	4	2	103		214		101	73		6				37	4	9	6	1,012
South Dakota			94	3		41		100	1	38	78	1			2		13		18		389
Tennessee			476	4	4	199		279		185	126		12				60	17	30	1	1,395
Texas	14		2033	14	7	634		1336	1	656	493		35		16		189	137	80	6	5,651
Utah			106	7	3	18	2	90		51	39		6		4		13	6	18	3	370
Vermont			44			13		29		9	25				1		3	1	16	6	148
Virginia		4	491	2	3	224		316	16	142	139		7		8		41	24	33	8	1,455
Washington			169	3		95		175	1	64	65	6					22	3	44	5	657
West Virginia		7	203	2	2	86	6	147		77	64		1		3		26	11	32	1	666
Wisconsin			470	9	4	184	1	328	7	140	192		7		7	12	46	9	33	12	1,481
Wyoming			97			25		82	2	57	50	1	2		1		11	3	24		355
Total—January, 1952	142	117	19455	288	254	7979	82	12988	76	5969	6650	47	536	19	239	29	2114	946	1478	283	59,661
Total—January, 1951	189	267	29314	407	406	10730	112	20890	38	8967	6121	74	1005	22	397	45	3195	1277	2357	234	68,056

* Data from R. L. Polk & Co.

TRUCKS IN USE BY MAKES AND BY MODEL YEAR*

(As of July 1, 1951)

Makes	1951	1950	1949	1948	1947	1946	1945	1944	1943	1942	1941	1940	1939	1938	1937	1936	1935	Prior to 1935	Year Unknown	Total July 1, 1951
Autocar	1,100	1,724	1,395	2,491	4,010	4,207	2,035	970	193	763	2,082	1,179	1,028	955	813	808	278	1,007	198	26,623
Brockway	1,371	2,220	1,434	2,627	3,777	3,298	1,819	827	86	272	1,615	969	832	608	682	625	242	541	263	24,217
Chevrolet	176,790	381,142	324,190	291,997	186,989	245,662	30,383	14,294	2,383	81,567	170,824	131,835	97,843	66,318	103,333	80,144	41,427	68,413	12,662	2,943,246
Divco	302	456	577	2,179	1,801	57	7	11	2	64	54	24	20	8	15					4,130
Diamond T	2,783	4,989	4,547	10,072	9,959	4,752	2,946	1,350	204	1,235	4,241	3,829	2,706	2,071	3,064	2,631	1,449	2,394	592	65,361
Dodge	2,077	4,247	3,394	5,799	5,791	4,233	1,773	269	113	581	2,506	1,397	1,347	826	389	364	123	243	267	38,167
Federal	51,248	104,278	106,231	109,335	115,662	108,064	19,071	6,699	2,115	33,799	66,342	46,239	33,715	19,845	31,016	26,602	15,697	18,399	8,390	925,332
Ford	121,160	305,840	196,211	224,347	199,335	190,311	60,399	19,362	6,452	63,494	144,359	100,812	79,740	53,779	91,099	94,707	61,621	200,884	13,000	2,145,980
FWD	134	274	249	823	1,099	719	297	121	25	132	294	186	130	130	215	214	114	300	96	5,699
G. M. C.	46,121	101,246	70,898	75,662	46,253	24,361	11,104	8,319	2,400	20,333	34,949	24,361	16,594	9,599	19,099	8,514	1,026	3,490	3,473	626,761
International	45,219	86,218	85,441	116,992	111,945	80,813	26,703	13,299	3,266	24,604	70,399	90,362	38,127	31,149	30,992	26,199	14,262	15,999	8,249	691,435
Kenworth	262	622	399	439	602	393	329	130	73	292	149	81	81	81	79	74	49	219	14	4,134
Mack	5,776	9,066	6,196	8,854	11,676	3,918	4,185	3,475	372	2,894	8,992	4,907	3,999	2,190	2,713	1,426	699	5,999	249	60,949
Peterbilt										880	8,539	7,918	4,739	4,940	6,099	6,702	1,895	3,399	679	44,577
Pontiac	648	1,740	1,461		6,215	6,199	2,296	499	148	1,643	1,165	552	421	1,167	1,365	799	760	2,677	492	49,701
Reo	2,294	3,061	3,399	10,847	6,215	6,199	2,296	499	148	1,643	1,165	552	421	1,167	1,365	799	760	2,677	492	49,701
Sterling	169	349	190	392	549	480	279	244	46	198	329	227	203	109	151	130	67	399	36	4,565
Studebaker	19,020	37,914	75,051	27,448	38,270	24,270	2,933	1,525	810	1,917	4,899	1,243	1,099	1,059	2,510	921	479	1,745	1,213	244,431
White	6,448	11,627	7,122	10,640	12,539	6,137	5,936	5,720	967	2,624	6,192	2,722	1,992	1,499	2,262	1,911	749	4,412	682	80,269
Willys	16,457	24,612	28,942	68,690	133,030	26,704	2,899	1,240	619	6,044	9,903	6,007	1,017	1,364	1,766	647	397	957	1,174	212,940
Wheeler	5,109	10,728	8,896	9,992	6,938	6,999	2,354	1,083	230	4,412	3,787	2,813	2,324	3,982	3,481	1,952	14,799	5,533	100,571	
Total	511,222	1,001,802	844,753	971,086	767,053	717,101	156,353	70,012	24,439	243,376	533,623	381,843	295,870	198,847	305,463	252,744	144,379	385,796	86,776	6,064,8

Total Registrations

TOTAL TRUCK REGISTRATIONS BY STATES

	1951	1950	1949	1948	1947	1946
Alabama	162,058	151,709	138,062	127,085	108,251	88,441
Arizona	64,584	58,737	52,979	48,647	42,295	35,044
Arkansas	153,149	140,388	121,413	125,161	112,157	94,450
California	643,926†	473,897	415,956	529,492	487,929†	406,729†
Colorado	126,325	131,299	124,709	115,006	101,953	90,543
Connecticut	94,493	87,174	77,716	75,691	76,432	75,266
Delaware	20,993	20,909	17,682	17,557	15,913	14,296
District of Columbia	18,602	18,372	18,389	18,389	15,588	14,495
Florida	187,219	175,240	165,307	156,639	138,373	120,525
Georgia	203,825	192,845	178,479	167,525	150,106	126,403
Idaho	75,800	71,405	64,137	59,644	50,877	40,000
Illinois	364,000	321,738	336,174	315,988	282,125	253,385
Indiana	215,724	244,258	206,154	227,480	197,416	163,859
Iowa	189,278	181,748	189,303	150,973	133,088	115,984
Kansas	215,097	203,722	195,449	183,733	167,366	147,296
Kentucky	176,800	167,342	154,941	137,711	118,461	101,541
Louisiana	161,426	151,749	140,001	122,935	105,958	88,117
Maine	63,353	64,195	59,894	62,210	61,001	56,769
Maryland	99,894	95,888	92,200	90,835	82,611	81,649
Massachusetts	169,543	165,850	153,208	151,809	144,113	131,071
Michigan	311,948	294,825	270,309	258,689	222,560	194,546
Minnesota	202,536	188,990	182,632	163,756	148,644	130,948
Mississippi	169,140	139,442	123,954	117,537	99,390	95,536
Missouri	285,000	261,607	245,458	227,205	209,997	188,394
Montana	84,252	70,210	76,476	70,391	63,671	54,947
Nebraska	126,500	123,933	119,473	105,750	98,296	87,121
Nevada	18,753	16,023	14,611	13,417	12,595	10,778
New Hampshire	32,000	39,347	38,214	31,622	35,663	28,672
New Jersey	225,371	208,798	199,920	189,260	186,794	167,506
New Mexico	65,889	60,123	52,564	45,996	41,082	35,179
New York	458,661	471,872	493,868	498,126	425,323	370,709
North Carolina	209,465	201,881	177,742	167,824	147,703	123,748
North Dakota	84,635	81,967	77,804	68,919	60,777	53,868
Ohio	354,595	327,359	304,801	296,296	270,294	242,603
Oklahoma	211,365	201,160	183,435	162,941	143,078	128,124
Oregon	83,841	130,979	123,897	115,648	115,845*	99,025
Pennsylvania	530,000	508,927	452,887	416,551	407,591	342,172
Rhode Island	32,056	30,826	30,161	29,562	28,413	26,959
South Carolina	116,983	109,367	100,633	91,849	85,376	64,158
South Dakota	75,481	70,888	66,656	60,163	50,545	42,163
Tennessee	188,726	163,946	153,177	139,020	124,826	99,517
Texas	659,999	613,485	549,520	526,000	437,706	379,156
Utah	51,203	46,117	42,309	39,637	37,148	31,267
Vermont	14,941	14,911	15,023	15,355	14,818	13,570
Virginia	196,383	165,429	153,616	150,633	132,996	116,084
Washington	163,772	155,708	152,980	145,787	133,102	117,173
West Virginia	95,400	101,361	96,831	86,217	76,940	66,612
Wisconsin	228,277	221,368	210,069	196,503	181,443	160,940
Wyoming	42,729	38,641	35,358	31,706	27,341	24,105
Total	8,726,992	8,185,949	7,615,431	7,356,553	6,612,922	5,749,643

†—Includes light commercial vehicles registered as passenger cars.
*—Includes trailers for 1947 and all previous years.

TOTAL U. S. TRUCK REGISTRATIONS

Year	Units	% Gain
1915	136,000	59
1916	215,000	58
1917	326,000	52
1918	525,000	61
1919	794,372	51
1920	1,008,082	27
1921	1,117,100	11
1922	1,375,725	23
1923	1,612,569	17
1924	2,134,724	32
1925	2,440,854	14
1926	2,764,222	13
1927	2,914,019	5
1928	3,113,999	7
1929	3,379,854	8
1930	3,486,019	3
1931	3,468,571	-0.6
1932	3,229,315	-0.7
1933	3,227,357	-0.6
1934	3,409,335	5.6
1935	3,655,705	7.1
1936	3,981,755	9.1
1937	4,107,244	3.1
1938	4,210,022	2.5
1939	4,419,693	5.0
1940	4,604,722	4.2
1941	4,859,682	5.5
1942	4,644,209	-4.4
1943	4,548,882	-2.0
1944	4,516,157	-0.7
1945	4,908,776	8.6
1946	5,749,643	17.1
1947	6,612,922	15.0
1948	7,356,553	11.2
1949	7,615,431	3.5
1950	8,185,949	7.5
1951	8,726,992	6.7

Truck Dealers, Wholesalers, Independent Repair Shops *

(As of January of Each Year.)

	Wholesale	Total Truck Dealers	Independent Repair Shops
1945	6,217	26,370	41,193
1946	6,612	27,159	42,702
1947	7,328	29,397	49,485
1948	7,982	25,998†	55,694
1949	8,338	27,574	59,906
1950	8,567	28,307	63,714
1951	8,687	30,297	71,199
1952	8,703	30,009	70,324

†—Reduction in truck dealers due to discontinuance of Plymouth truck production.
*—Trade List Department, Chilton Company.

NUMBER AND PER CENT OF TRUCKS IN USE, BY AGE GROUPS†

Age in Years	1951			1950			1949			1948		
	Units	% of Total	Cumul.	Units	% of Total	Cumul.	Units	% of Total	Cumul.	Units	% of Total	Cumul.
Under 1	511,222	6.38	6.38	549,909	7.31	7.31	468,471	6.70	6.70	525,189	6.06	6.06
1-2	1,091,802	13.63	20.01	942,603	12.53	19.84	983,653	14.06	20.76	832,635	12.79	20.85
2-3	944,753	11.80	31.81	983,383	13.07	32.91	824,162	11.78	32.54	769,516	11.82	32.67
3-4	971,056	12.13	43.94	810,705	10.77	43.68	757,071	10.82	43.36	185,614	2.85	35.52
4-5	787,053	9.83	53.77	742,735	9.87	53.55	173,416	2.48	45.84	85,481	1.31	36.83
5-6	717,101	8.95	62.72	166,019	2.21	55.76	78,436	1.12	46.96	26,456	.41	37.24
6-7	158,353	1.98	64.70	73,970	.98	56.74	24,653	.35	47.31	297,128	4.48	41.80
7-8	70,012	.87	65.57	23,632	.31	57.05	279,870	4.00	51.31	661,726	10.16	51.96
8-9	24,438	.31	65.88	284,297	3.81	60.86	629,246	8.99	60.30	490,969	7.54	59.50
9-10	243,376	3.04	68.92	586,264	7.79	68.35	459,529	6.57	66.87	385,731	5.92	65.42
10-11	533,623	6.66	75.58	429,734	5.71	74.06	358,675	5.13	72.00	285,537	4.38	69.80
11-12	381,843	4.77	80.35	326,111	4.33	78.39	261,282	3.73	75.73	461,843	7.09	76.89
12-13	285,620	3.57	83.92	231,091	3.07	81.46	419,275	5.99	81.72	418,478	6.43	83.32
13-14	199,547	2.49	86.41	364,745	4.85	86.31	372,740	5.33	87.06	257,376	3.95	87.27
14-15	305,483	3.81	90.22	315,551	4.19	90.50	224,843	3.21	90.26	828,286*	12.73	.....
15-16	252,744	3.16	93.38	184,506	2.45	92.95	153,335	2.19	92.45	.....	.....	.....
16-17	144,376	1.80	95.18	121,313	1.62	94.57	71,024	1.02	93.47	.....	.....	.....
17 and older	385,706	4.82	.....	408,316	5.43	.....	456,641	6.53	.....	.....	.....	.....
Total	8,008,108	100.00	100.00	7,524,884	100.00	100.00	6,996,322	100.00	100.00	6,511,965	100.00	100.00
Age not known	56,775	.....	.....	52,153	.....	.....	90,806	.....	.....	93,325	.....	.....
Total in use	8,064,883	.....	.....	7,577,037	.....	.....	7,087,128	.....	.....	6,605,290	.....	.....
Average age of known models	6.55 yrs.	.....	.....	6.96 yrs.	.....	.....	7.35 yrs.	.....	.....	7.43 yrs.	.....	.....

† Based on data from The Reuben H. Donnelley Corp.

MOTOR BUS FACTORY SALES—BY TYPE OF BUS*

Does Not Include Non-Integral School Buses

Year	City Coaches			Intercity Coaches			Special Coaches†			Total All Coaches		
	Domestic	Foreign	Total	Domestic	Foreign	Total	Domestic	Foreign	Total	Domestic	Foreign	Total
1946	6,842	899	7,541	2,278	107	2,385	159	7	166	9,277	813	10,090
1947	11,799	1,821	13,620	3,451	800	3,951	1,400	139	1,539	16,650	2,460	19,110
1948	6,971	1,287	8,258	2,558	488	3,026	997	37	1,035	10,526	1,773	12,299
1949	3,402	398	3,800	890	185	855	802	54	856	4,894	617	5,511
1950	2,748	705	3,453	581	178	759	683	13	696	4,012	896	4,908
1951	4,753	545	5,298	1,233	121	1,354	2,796	5	2,801	8,782	671	9,453

* Automobile Manufacturers Association.

† Includes Integral School Buses.

Trailers & Buses

TRAILER REGISTRATIONS

1951 Trailers and Semi-Trailers

State	Tourist	Commercial	Total
Alabama			11,886
Arizona	12,701	10,866	23,567
Arkansas			25,713
California	89,251	300,382	389,633
Colorado			25,585
Connecticut	15,367	6,955	22,322
Delaware			4,252
District of Columbia			1,523
Florida	75,977	12,305	88,282
Georgia	3,273	28,366	31,639
Idaho	35,000	520	35,520
Illinois	5,000	58,000	63,000
Indiana			125,567
Iowa			114,017
Kansas			16,451
Kentucky			N.L.
Louisiana	1,770	31,947	33,717
Maine			21,130
Maryland			15,900
Massachusetts			56,686
Michigan	15,084	227,222	242,306
Minnesota	26,029	35,803	61,832
Mississippi	13,380	4,298	17,678
Missouri			80,000
Montana			7,764
Nebraska	4,250	8,500	12,750
Nevada			5,078
New Hampshire			5,500
New Jersey			27,683
New Mexico			7,884
New York			117,616
North Carolina			77,140
North Dakota	2,443	841	3,284
Ohio			198,195
Oklahoma	2,255	11,905	14,160
Oregon			94,857
Pennsylvania			5,042
Rhode Island			13,059
South Carolina	1,324	11,735	13,059
South Dakota			31,261
Tennessee			150,764
Texas	24,543	126,221	150,764
Utah			2,243
Vermont			6,781
Virginia	24,725	13,016	37,741
Washington			48,992
West Virginia	2,842	1,076	4,518
Wisconsin	5,413	12,001	17,414
Wyoming			15,995
Total	360,427	902,359	2,413,521

N.L.—Not licensed.

†—Included with trucks.

TRUCK TRAILER SHIPMENTS BY YEARS, 1946-1951*

	Production	Units	Value
1951	67,384	64,694	\$305,304,000
1950	64,617	65,966	229,685,000
1949	33,097	34,273	119,098,000
1948	44,478	46,960	139,996,000
1947	53,096	55,372	138,383,000
1946	76,234	73,001	151,384,000

*—Industry Division, Bureau of the Census.

TRUCK TRAILER SHIPMENTS, BY TYPE

As reported by Industry Division, Bureau of the Census

Type of Trailer	1951	1950	1949	1948	1947
Vans:					
Insulated and Refrigerated	3,900	3,992	2,756	2,724	2,474
Steel†	718				
Aluminum‡	1,891				
Furniture	1,289				
Steel†	617†				
Aluminum‡	77†				
All other closed-top	22,569	31,554	14,623	18,968	20,600
Steel†	6,745				
Aluminum‡	4,510				
Open-top	3,111	3,951	1,020	2,023	1,769
Steel†	910				
Aluminum‡	649				
Total Vans	30,869	39,497	18,999	23,715	24,833
Tanks:					
Petroleum	5,065	3,812	2,008	3,042	3,388
All other	617	259	166	378	416
Total Tanks	5,682	4,071	2,174	3,420	3,802
Pole, pipe and logging					
Single axle	1,215	1,447	661	2,184	3,696
Tandem axle	1,734	1,168	628	1,716	1,624
Total Pole	2,949	2,615	1,309	3,902	5,320
Platforms					
Racks, livestock and stake	1,951	1,648	1,094	1,949	3,404
Grain bodies	926	665	502	895	1,167
Flats (all types)	10,326	9,073	4,673	6,366	7,932
Total Platforms	13,205	11,386	6,469	9,210	12,503
Low-bed heavy haulers	4,028	1,783	1,433	1,834	2,417
Dump trailers	1,156	881	522	654	797
All other trailers	3,536	3,386	1,841	2,142	2,399
Total Complete Trailers	61,425	63,619	32,747	44,877	52,071
Trailer chassis	3,269	2,347	1,526	2,083	3,301
Total Trailer and Chassis	64,694	65,966	34,273	46,960	55,372

* Included with All Other Closed-top.

† Data for eleven months only.

‡ Steel and aluminum van data are only available for 7 months.

TRUCK TRAILER SHIPMENTS BY MONTHS

In Units and Their Value

	1951		1950	
	Shipments	Value	Shipments	Value
January	6,376	\$23,160,000	3,173	\$10,916,000
February	5,852	20,980,000	3,573	12,414,000
March	7,056	24,550,000	4,509	15,438,000
April	5,796	20,850,000	4,511	15,437,000
May	5,936	22,451,000	5,006	17,226,000
June	4,972	19,701,000	5,640	10,792,000
July	4,758	18,779,000	6,200	21,188,000
August	5,200	20,167,000	7,236	24,785,000
September	4,643	18,312,000	6,820	23,258,000
October	5,608	21,563,000	6,686	24,106,000
November	4,276	17,351,000	6,403	23,114,000
December	4,215	17,420,000	6,209	23,009,000
Total*	64,694	\$245,304,000	65,966	\$229,685,000

* Eleven months. Does not agree with "Trailers by Type" due to revisions of which we have no record.

REVENUE MOTOR BUS FACTORY SALES

From Plants Located in the United States

Month	1951	1950	1949	1948	1947	1946	1945	1944	1943	1942	1941
January	661	219	669	1,382	1,273	447	231	227	901	430	
February	521	133	418	1,101	1,303	285	245	226	828	456	
March	829	199	545	1,430	1,421	827	338	102	929	662	
April	819	268	514	1,056	1,650	948	352	75	875	603	
May	742	412	564	1,266	1,853	789	367	33	938	701	
June	838	596	632	1,068	1,628	774	283	54	876	809	
July	665	397	439	1,012	1,606	862	381	15	679	850	
August	783	457	444	771	1,786	1,067	470	48	263	627	
September	743	423	288	1,143	1,607	833	563	145	557	746	
October	1,174	553	322	679	1,687	975	594	162	376	616	
November	833	594	308	546	1,416	1,146	484	199	419	573	
December	844	665	389	624	1,721	1,438	1,463	326	497	952	
Total	9,452	4,908	5,511	12,299	19,110	10,091	5,799	1,613	8,337	7,626	

Source: Automobile Manufacturers Association.

Operating Data

INDEXES OF TONS TRANSPORTED IN INTERCITY SERVICE*

By Class I Intercity Motor Carriers of Property⁽¹⁾

(Index Base, Year 1941 = 100)

Region	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951 ⁽²⁾
New England	100	113	116	115	114	124	127	130	127	156	161
Middle Atlantic	100	108	114	117	113	123	142	164	168	210	227
Central	100	98	108	104	101	113	138	161	166	231	239
Southern	100	112	130	131	127	123	140	169	190	240	263
Northwestern	100	120	148	156	164	190	221	254	258	301	324
Midwestern	100	122	138	137	141	153	185	224	246	290	306
Southwestern	100	114	145	144	148	158	194	231	246	310	341
Rocky Mountain	100	136	150	149	138	149	197	230	248	290	334
Pacific	100	112	131	139	143	150	166	176	179	237	274
Total—United States	100	107	119	119	118	128	149	171	178	228	244

*—Compiled by the American Trucking Association, Inc.

(1)—Covers Common and Contract Carriers. Under ICC's revised definition Class I Carriers are those having annual gross revenues of \$200,000 or more as compared to the former minimum of \$100,000 or more.

(2)—Preliminary data.

COMPARISON OF INTERCITY TRUCK TONNAGE, 1951-1950*

By Commodity Classes—Includes Common and Contract Carriers

	Number of Carriers	Tonnage Carried				% Change 1951 from 1950
		Tons		% of U. S. Total		
		1951	1950	1951	1950	
General Freight	833	96,872,436	90,910,257	54.86	55.16	+6.7
Household Goods	44	812,820	686,944	.46	.42	+10.3
Heavy Machinery	23	1,239,836	1,034,209	.70	.63	+10.9
Liquid Petroleum	93	40,857,207	36,419,581	23.12	22.10	+12.2
Refrigerated Liquids	9	910,902	978,731	.52	.59	- 6.9
Refrigerated Solids	17	647,988	816,318	.37	.31	+25.5
Agricultural Commodities	26	2,586,174	2,180,586	1.46	1.32	+10.6
Motor Vehicles	65	7,028,227	7,467,443	3.93	4.53	- 5.9
Building Materials	15	2,051,500	1,986,615	1.16	1.21	+ 3.3
Film and Associated Products	4	33,948	65,832	.02	.04	-48.4
All Other	185	23,606,758	22,563,051	13.35	13.69	+ 4.6
Total—All Classes	1314	176,747,796	164,809,567	100.00	100.00	+ 7.2

*—Compiled by the American Trucking Associations, Inc. It by no means represents TOTAL tonnage.

TRANSIT RIDERS IN URBAN SERVICE*

by Types of Vehicles—1940 to 1951

(Millions of Persons)

Year	Railway			Trolley Coach	Motor Bus	Grand Total
	Surface	Subway and Elevated	Total			
1943	9,160	2,656	11,816	1,175	9,019	22,000
1944	9,516	2,621	12,137	1,234	9,648	23,017
1945	9,428	2,698	12,126	1,244	9,886	23,254
1946	9,027	2,635	11,662	1,311	10,199	23,572
1947	9,086	2,756	10,652	1,356	10,332	22,540
1948	9,506	2,696	9,112	1,628	10,728	21,988
1949	4,839	2,346	7,165	1,661	10,162	19,008
1950	3,904	2,264	6,168	1,658	9,420	17,246
1951	3,090	2,220	5,310	1,654	9,236	16,200

*—American Transit Association.

NEW TRANSIT BUSES DELIVERED*

by Seating Capacity—1943 to 1951

Year	Seating Capacity			Total Buses
	29 or less	30 to 39	40 or more	
1943	847	179	228	1,216
1944	2,423	369	1,015	3,807
1945	1,787	1,163	1,801	4,441
1946	1,649	2,429	2,188	6,466
1947	1,051	3,717	6,361	12,029
1948	823	2,144	4,342	7,009
1949	280	1,344	1,725	3,349
1950	205	852	1,611	2,668
1951†	n.a.	n.a.	n.a.	4,500

n.a.—Not available.

†—Preliminary.

*—American Transit Association.

TRAFFIC VOLUME OF CLASS I INTERCITY MOTOR CARRIERS*

Nine Months 1951 and 1950 Compared

	1951	1950	% Increase
Truck and Tractor Miles Operated	4,286,247,500	3,909,906,058	9.6
Tons of Revenue Freight Transported	174,649,849	158,594,271	10.1

*—From records of The Interstate Commerce Commission.

INTERCITY PASSENGER-MILES TRAVELED BY MODE OF TRANSPORTATION*

In Billions of Passenger Miles

Year	Total Intercity Travel	Private Automobiles		Railroads		Intercity Buses		Air Lines		Waterways	
		Miles	% of Total	Miles	% of Total	Miles	% of Total	Miles	% of Total	Miles	% of Total
1941	307.6	264.3	85.9	26.5	8.6	13.6	4.4	1.4	0.5	1.8	0.6
1942	274.7	199.6	72.7	50.3	18.3	21.5	7.8	1.4	0.5	1.9	0.7
1943	262.6	147.1	56.0	84.6	32.2	27.4	10.4	1.6	0.7	1.9	0.7
1944	274.5	151.3	55.1	92.2	33.6	26.5	9.7	2.3	0.8	2.2	0.8
1945	300.3	179.8	59.9	88.1	29.3	26.9	9.0	3.4	1.1	2.1	0.7
1946	347.8	253.6	72.9	60.4	17.4	25.6	7.3	5.9	1.7	2.3	0.7
1947	345.6	273.0	79.0	40.8	11.8	23.9	6.9	6.1	1.8	1.8	0.5
1948	354.5	287.4	81.1	36.0	10.1	23.6	6.6	5.9	1.7	1.7	0.5
1949	377.8	316.7	83.8	30.5	8.1	22.4	5.9	6.8	1.8	1.4	0.4
1950	394.9	337.3	85.4	27.5	7.0	20.9	5.3	8.0	2.0	1.2	0.3

*—Compiled by NAMBO from records of Interstate Commerce Commission.

1952

Selection and Operation

SECTION

3

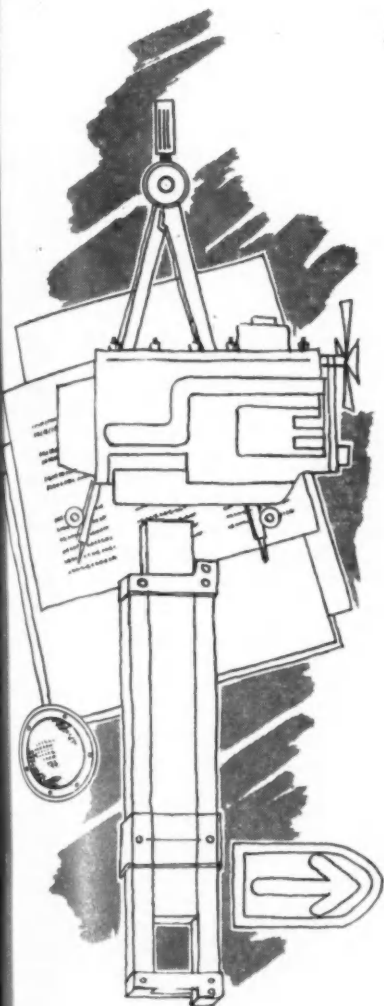
Operating Charts

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HERE is information of inestimable value to every fleetman. These charts on size and weight limits, safety equipment, tire wear factors, for example, are used by thousands of CCJ readers. Completely revised and brought up to date, this information should be kept at the elbows of those who will be called upon to use it during the year. Transmission ratios, third axle specifications, bus specifications, fan belt specifications, too, will be found useful in fleet operation and maintenance.



STATE SIZE and

STATE	SIZE RESTRICTIONS							GROSS WEIGHT		(See Boxed NOTE) PRACTICAL GROSS WEIGHT LIMITS													(In thousands of pounds)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
	Width (Inches)	Height (Feet)	LENGTH				Minimum Tandem Axle Spacing	(LEGAL LIMITS)		Below Limits Apply to Pneumatic Tires Unless Otherwise Specified													4-Wheel Tractor 2-Wheel Semi-Tr.	4-Wheel Tractor 4-Wheel Semi-Tr.	6-Wheel Tractor 4-Wheel Semi-Tr.	4-Wheel Truck 4-Wheel Trailer	4-Wheel Truck 6-Wheel Trailer	6-Wheel Truck 4-Wheel Trailer	6-Wheel Truck 6-Wheel Trailer	4-Wheel Tractor 2-Wheel Semi-Tr. 4-Wheel Trailer	4-Wheel Tractor 4-Wheel Semi-Tr. 4-Wheel Trailer	6-Wheel Tractor 4-Wheel Semi-Tr. 6-Wheel Trailer																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
			Single Unit	Tractor Semi-Trailer	Other Combinations	Number of Trailers (Semi-Trailer = 1/2)		Pounds Per Inch of Tire Width	Per Axle (1000 lb.)	4-Wheel Single Unit	6-Wheel Single Unit	4-Wheel Tractor 2-Wheel Semi-Tr.	4-Wheel Tractor 4-Wheel Semi-Tr.	6-Wheel Tractor 4-Wheel Semi-Tr.	4-Wheel Truck 4-Wheel Trailer	4-Wheel Truck 6-Wheel Trailer	6-Wheel Truck 4-Wheel Trailer	6-Wheel Truck 6-Wheel Trailer	4-Wheel Tractor 2-Wheel Semi-Tr. 4-Wheel Trailer	4-Wheel Tractor 4-Wheel Semi-Tr. 4-Wheel Trailer	6-Wheel Tractor 4-Wheel Semi-Tr. 6-Wheel Trailer																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
TVX	96	m 12 1/2	35k	45	NP	1/2	NS	600	18	36	*46.9	*53.9	*53.9	*53.9	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	

STATE	Width (Inches)
Okla. X	96
VX	96
Pa.	96
R. I.	102
S. C. X	96
S. D. X	96
Tenn. X	96
Tex. X	96
Utah X	96
Vt.	96
VZ	96
Wash. X	96
W. Va. X	96
Wis. VX	96
Wyo. X	96

*-See explanation
 -Not applicable
 -Vehicles must have
 -Plus weight
 -motor vehicle
 -With power
 -104 inches
 -State H
 -on designa
 -Applies to
 -after Mar
 -Vehicles reg
 -for purcha
 -or before
 -not subject
 -its until 3
 -Buses per
 -Automobil
 -loaded 13
 -Okla. 13
 -Including
 -Graduated
 -26,000 lb
 -3 ft. 6
 -June 1 to
 -fers with
 -500 lbs.
 -under 30
 -Buses per
 -Permits
 -60 ft. leng
 -Interurban
 -40 ft.
 -Buses w
 -40 ft. on
 -subject to
 -Table: Ther
 -weights
 -widths.
 -NP-Not
 -NR-No r
 -NS-Not
 -P-Pneum
 -S-Solid
 -C-Permiss
 -highways.
 -D-Permiss
 -highways.
 -G-Axles le
 -limited to
 -H-Maximu

WEIGHT LIMITS

Selection & Operation

4-Wheel Tractor 6-Wheel Tractor 6-Wheel Trailer		STATE		SIZE RESTRICTIONS						GROSS WEIGHT (LEGAL LIMITS)		PRACTICAL GROSS WEIGHT LIMITS (See Boxed NOTE) Below Limits Apply to Pneumatic Tires Unless Otherwise Specified														(In thousands of pounds)													
		Width (Inches)		Height (Feet)		LENGTH		Minimum Tandem Axle Spacing		Pounds Per Inch of Tire Width		Per Axle (1000 lb.)		4-Wheel Single Unit		6-Wheel Single Unit		4-Wheel Tractor 2-Wheel Semi-Tr.		4-Wheel Tractor 4-Wheel Semi-T.		6-Wheel Tractor 4-Wheel Semi-T.		4-Wheel Truck 4-Wheel Trailer		4-Wheel Truck 6-Wheel Trailer		6-Wheel Truck 4-Wheel Trailer		6-Wheel Truck 6-Wheel Trailer		4-Wheel Tractor 2-Wheel Semi-T. 4-Wheel Trailer		4-Wheel Tractor 4-Wheel Semi-T. 4-Wheel Trailer		6-Wheel Tractor 4-Wheel Semi-T. 4-Wheel Trailer			
	NP	Okla.	X	96	m 12 1/2	35r	50	50	1 or 1/2	40	650	18	36	50	54	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	NP	NP	NP	NP	NP	NP	NP	
	76.8	Ore.	VX	96	12 1/2	35	50s	50s	1 or 1/2	40	600	18	36	50	54	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	NP	NP	NP	NP	NP	NP	NP	
	NP	Pa.		96	m 12 1/2	35ak	45	50	1 or 1/2	36	800	20	H 30	H 40	H 45	H 45	H 45	H 56	H 62	H 62	H 62	H 62	H 62	H 62	H 62	H 62	H 62	H 62	H 62	NP	NP	NP	NP	NP	NP	NP	NP	NP	
	76.8	R.I.		102	12 1/2	40	50	50	1 or 1/2	40	800	22.4	36	44	50	50	50	64	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
	*73.6	S.C.	X	96	12 1/2	40a	50	50	1 or 1/2	40	NR	20-I 16-J	40	52	60	68.3	68.3	68.3	68.3	68.3	68.3	68.3	68.3	68.3	68.3	68.3	68.3	68.3	68.3	68.3	68.3	68.3	68.3	68.3	68.3	68.3	68.3	68.3	68.3
	NP	S.D.	X	96	13	35ak	50	50	1 or 1/2	40	600	18-I 16-J	36	50	54	64.6	64.6	64.6	64.6	64.6	64.6	64.6	64.6	64.6	64.6	64.6	64.6	64.6	64.6	64.6	64.6	64.6	64.6	64.6	64.6	64.6	64.6	64.6	64.6
	60c	Tenn.	X	96	12 1/2	35	45	45	1 or 1/2	NS	NS	18	36	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	
	NP	Tex.	X	96	13 1/2	35	45	45	1 or 1/2	40	680-I 600-J	18-I 16-J	36	50	54	58.4	58.4	58.4	58.4	58.4	58.4	58.4	58.4	58.4	58.4	58.4	58.4	58.4	58.4	58.4	58.4	58.4	58.4	58.4	58.4	58.4	58.4	58.4	58.4
	NP	Utah	X	96	14	45	60	60	2	40	NS	18-P 13.5-S	36	51	54	69	79.9	72	79.9	79.9	79.9	79.9	79.9	79.9	79.9	79.9	79.9	79.9	79.9	79.9	79.9	79.9	79.9	79.9	79.9	79.9	79.9	79.9	
	NP	Vt.		96	12 1/2	50	50	50	1 or 1/2	40	600	NR	30	40	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
	72	Va.	VZ	96	m 12 1/2	35g	45	45	1 or 1/2	40	650	18	32	40	40	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	
	72	Wash.	X	96	12 1/2	35g	60	60	1 or 1/2	42	500	18	28	36	46	60	68	60	60	68	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	
	72	W. Va.	X	96	m 12 1/2	35ak	45	45	1 or 1/2	40	NR	18	36	50	54	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	
	NP	Wis.	VX	96d	m 12 1/2	35T	45	45	1 or 1/2	40	800	18-C 12-D	36-C	50-C	54-C	68-C	68-C	68-C	68-C	68-C	68-C	68-C	68-C	68-C	68-C	68-C	68-C	68-C	68-C	68-C	68-C	68-C	68-C	68-C	68-C	68-C	68-C	68-C	
	NP	Wyo.	X	96	12 1/2	40	60	60	1 or 1/2	40	NS	18	36	50	54	68	73.9	72	73.9	73.9	73.9	73.9	73.9	73.9	73.9	73.9	73.9	73.9	73.9	73.9	73.9	73.9	73.9	73.9	73.9	73.9	73.9	73.9	

NOTE ON "W" AND ASTERISK

Except when shown by asterisk or when followed by the letter "W," the above gross weight limits are the limits fixed by state law.

When shown by asterisk the above limits are computations made by the National Highway Users Conference to show what it considers to be practical gross weights where gross weights are arrived at by application of one of the formulae shown below under Footnote "X." In making these computations, wheel base was arrived at by deducting 8 ft. total over-hang front and rear from permissible overall length of unit or combination; tandem axles were considered to be a minimum permissible distance apart. When actual over-hang is less than 8 ft. additional gross weight will be possible.

When followed by the letter "W," the limits shown are maximum possible weights where gross weight is determined by permissible axle weight. These limits are possible only when each axle carries a gross weight equal to the permissible axle limit as shown.

1.—See explanation at right.

2.—Not approved by Governor.

3.—Vehicles over 35 ft. length must have 3 axles.

4.—Plus weight on front axle of motor vehicle.

5.—With power brakes.

6.—104 inches for urban buses.

7.—State Highway Commission may allow 3-axle buses 40 ft. on designated highways.

8.—Applies to vehicles registered after March 1, 1950. Vehicles registered or contracted for purchase by residents on or before March 1, 1950, are not subject to these axle limits until March 31, 1955.

9.—Buses permitted 40 ft.

10.—Automobile transporters allowed 13 1/2 ft. height; in Okla. 13 ft.

11.—Including tolerance.

12.—Graded to tire width.

13.—26,000 lbs. on tandem axles 3 ft. 6 in. apart; applies June 1 to February 28; differs with season.

14.—500 lbs. when total tires under 30 inches wide.

15.—Buses permitted 45 ft.

16.—Permits may be granted for 60 ft. length.

17.—Interurban buses permitted 40 ft.

18.—Buses with 3 axles permitted 40 ft. on designated highways subject to 18,000 lbs. per axle.

19.—Table—There is a table of axle weights based upon tire widths.

NP—Not permitted.

NR—No restriction.

NS—Not specified.

P—Pneumatic tires.

S—Solid tires.

C—Permissible on "Class A" highways.

D—Permissible on "Class B" highways.

E—Axles less than 10 ft. apart limited to 16,000 lbs. per axle.

H—Maximum shown. In prac-

ice, permissible gross weight depends on chassis weight.

1.—Permissible on balloon tires.

2.—Permissible on other than balloon tires.

3.—2-axle buses permitted 23,625 lbs. maximum net weight; 3-axle bus, 31,500 lbs.

4.—With the following exceptions full trailers are permitted the same gross weight as other single units:

Ala., Iowa, Conn., Ky.—Full trailers prohibited.

Mass.—Trailer and load limited to 3,000 lbs.

V—Solid tires prohibited.

W—See Note above.

X—States where gross weight is determined by formula or by table of axle spacing. (See State under "Bridge Formulae" below and formula computations on next page.)

Z—See "Restrictions Peculiar to Certain States" on next page.

BRIDGE FORMULAE

Ala.—700 (L plus 40) when axles are over 18 ft. apart, otherwise 650 (L plus 40).

Ariz.—Gross weights graduated from 32,000 lbs. if axle spacing is 4 ft. to 76,800 lbs. if spacing is 56 ft. or more.

Ark.—Gross weights graduated

from 32,000 lbs. if axle spacing is 4 ft. to 73,280 lbs. if spacing is 57 ft. or more.

Calif.—Gross weights graduated from 32,000 lbs. if axle spacing is 4 feet to 76,800 lbs. if spacing is 56 feet or more.

Colo.—800 (L plus 40).

Del.—Gross weights graduated from 36,000 lbs. if axle spacing is 4 feet to 60,000 lbs. if spacing is 39 feet or more.

D. C.—Gross weights graduated from 38,000 lbs. if axle spacing is 4 ft. to 65,400 lbs. if spacing is 46 ft. or more.

Fla.—Gross weights graduated from 32,000 lbs. if axle spacing is 4 feet to 64,650 lbs. if spacing is 45 feet.

Ga.—700 (L plus 40).

Idaho.—Gross weights graduated from 30,500 lbs. if axle spacing is 3 feet to 72,000 lbs. if spacing is 56 feet or more.

Iowa.—Gross weights graduated from 32,000 lbs. if axle spacing is 4 feet to 60,800 lbs. if spacing is 40 feet or more.

Kans.—Gross weight graduated from 32,000 lbs. if axle spacing is 4 feet to 63,890 lbs. if spacing is 56 feet or more.

Maine.—Gross weights graduated from 32,000 lbs. if axle spac-

ing is 4 feet to 50,000 lbs. if spacing is 27 feet or more.

Md.—850 (L plus 40) any unit or combination, provided that gross weight of any vehicle or combination shall not exceed 65,000 lbs.

Minn.—Gross weights graduated from 28,000 lbs. if axle spacing is 4 ft. to 66,500 lbs. if spacing is 42 ft. or more.

Miss.—Gross weights graduated from 28,650 lbs. if axle spacing is 4 ft. to 52,650 lbs. if spacing is 30 ft. or more.

Mo.—Gross weights graduated from 32,000 lbs. if axle spacing is 4 ft. to 60,010 lbs. if spacing is 39 ft. or more.

Mont.—Gross weights graduated from 32,000 lbs. if axle spacing is 4 feet to 73,280 lbs. if spacing is 57 feet or more.

Nebr.—Gross weights graduated from 32,000 lbs. if axle spacing is 4 feet to 64,650 lbs. if spacing is 45 feet or more.

Nev.—Gross weights graduated from 32,000 lbs. if axle spacing is 4 feet to 76,800 lbs. if spacing is 56 feet or more.

N. M.—750 (L plus 40) when axles are over 18 ft. apart, otherwise 650 (Y plus 40).

N. Y.—750 (L plus 40) three or more consecutive axles and any unit or combination.

N. Dak.—750 (L plus 40) any unit or combination.

Ohio.—860 (L plus 47 1/2).

Okla.—Gross weights graduated from 32,000 lbs. if axle spacing is 4 feet to 60,000 lbs. if spacing is 39 feet or more.

Ore.—Gross weights graduated from 32,200 lbs. if axle spacing is 6 ft. to 76,000 lbs. if spacing is 55 feet or more, provided that no vehicle or combination shall exceed 60,000 lbs. except under permit.

S. C.—Gross weights graduated from 32,000 lbs. if axle spacing is 4 ft. to 68,350 lbs. if axle spacing is 50 ft. or more.

S. D.—Gross weights graduated from 32,000 lbs. if axle spacing is 4 feet to 64,650 lbs. if axle spacing is 45 feet or more.

Tenn.—700 (L plus 40).

Texas.—Gross weights graduated from 32,000 lbs. if axle spacing is 4 ft. to 58,420 lbs. if spacing is 41 ft.

Utah.—Gross weights graduated from 33,000 lbs. if axle spacing is 4 feet to 79,990 lbs. if spacing is 54 feet or more.

Wash.—Gross weight graduated from 32,000 lbs. if axle spacing is 4 feet to 72,000 lbs. if axle spacing is 57 feet or more.

W. Va.—Gross weights graduated from 32,000 lbs. if axle spacing is 4 ft. to 73,280 lbs. if spacing is 57 feet, provided that no vehicle shall exceed 60,800 lbs. except under permit.

Wisc.—1,000 (L plus 26) or gross weights graduated from 32,000 lbs. if axle spacing is 6 ft. to 68,000 lbs. if spacing is 40 ft. or more.

Wyo.—Gross weight graduated from 32,000 lbs. if axle spacing is 4 feet to 73,950 lbs. if spacing is 57 feet.

GROSS WEIGHTS COMPUTED BY FORMULAE

Computation of Gross Weights according to formulae, based on distance (in feet) between first and last axes, for States identified by State Size & Weight Limits chart by Footnote "X." It should be remembered that the figures in each column represent only a mathematical extension and are governed by Legal Overall Length Limits for single units and combinations of particular states. Also, that formula computations are superseded in some instances by specific limits given in the chart.

"L" (See Note Below)	Ala., ⁶ N. Mex., ⁶ North Dakota ⁶	Ala., ⁷ Georgia, Tennessee	N. Mex., ⁷ N. Y., North Dakota ⁷	Colorado	Ohio	Maryland	Wisconsin
	650 (L + 40)	700 (L + 40)	750 (L + 40)	800 (L + 40)	800 (L + 47½)	850 (L + 40)	1000 (L + 26)
10 ft.	32500 lb.	35000 lb.	37500 lb.	..... lb.	46000 lb.	42500 lb.	36000 lb.
11	33150	35700	38250	.....	46800	43350	37000
12	33800	36400	39000	.....	47600	44200	38000
13	34450	37100	39750	.....	48400	45050	39000
14	35100	37800	40500	43200	49200	45900	40000
15	35750	38500	41250	44000	50000	46750	41000
16	36400	39200	42000	44800	50800	47600	42000
17	37050	39900	42750	45600	51600	48450	43000
18	37700	40600	43500	46400	52400	49300	44000
19	38350	41300	44250	47200	53200	50150	45000
20	39000	42000	45000	48000	54000	51000	46000
21	39650	42700	45750	48800	54800	51850	47000
22	40300	43400	46500	49600	55600	52700	48000
23	40950	44100	47250	50400	56400	53550	49000
24	41600	44800	48000	51200	57200	54400	50000
25	42250	45500	48750	52000	58000	55250	51000
26	42900	46200	49500	52800	58800	56100	52000
27	43550	46900	50250	53600	59600	56950	53000
28	44200	47600	51000	54400	60400	57800	54000
29	44850	48300	51750	55200	61200	58650	55000
30	45500	49000	52500	56000	62000	59500	56000
31	46150	49700	53250	56800	62800	60350	57000
32	46800	50400	54000	57600	63600	61200	58000
33	47450	51100	54750	58400	64400	62050	59000
34	48100	51800	55500	59200	65200	62900	60000
35	48750	52500	56250	60000	66000	63750	61000
36	49400	53200	57000	60800	66800	64600	62000
37	50050	53900	57750	61600	67600	65450	63000
38	50700	54600	58500	62400	68400	66300	64000
39	51350	55300	59250	63200	69200	67150	65000
40	52000	56000	60000	64000	70000	68000	66000
41	52650	56700	60750	64800	70800	68850	67000
42	53300	57400	61500	65600	71600	69700	68000
43	53950	58100	62250	66400	72400	70550	69000
44	54600	58800	63000	67200	73200	71400	70000
45	55250	59500	63750	68000	74000	72250	71000
46	55900	60200	64500	68800	74800	73100	.....
47	56550	60900	65250	69600	75600	73950	.....
48	57200	61600	66000	70400	76400	74800	.....
49	57850	62300	66750	71200	77200	75650	.....
50	58500	63000	67500	72000	78000	76500	.....
51	59150	63700	68250	72800	78800	77350	.....
52	59800	64400	69000	73600	79600	78200	.....
53	60450	65100	69750	74400	80400	79050	.....
54	61100	65800	70500	75200	81200	79900	.....

"L"—Distance in feet between first and last axes of group of axes considered.

⁶—Vehicles with axles spaced 18 feet or less.

⁷—Vehicles with axles over 18 feet apart.

NATIONAL HIGHWAY USERS CONFERENCE, INC., National Press Bldg., Washington, D. C.

RESTRICTIONS PECULIAR TO CERTAIN STATES

ILL.—Limits shown are permissible on designated highways; otherwise limited to 16,000 lbs. on any one axle.

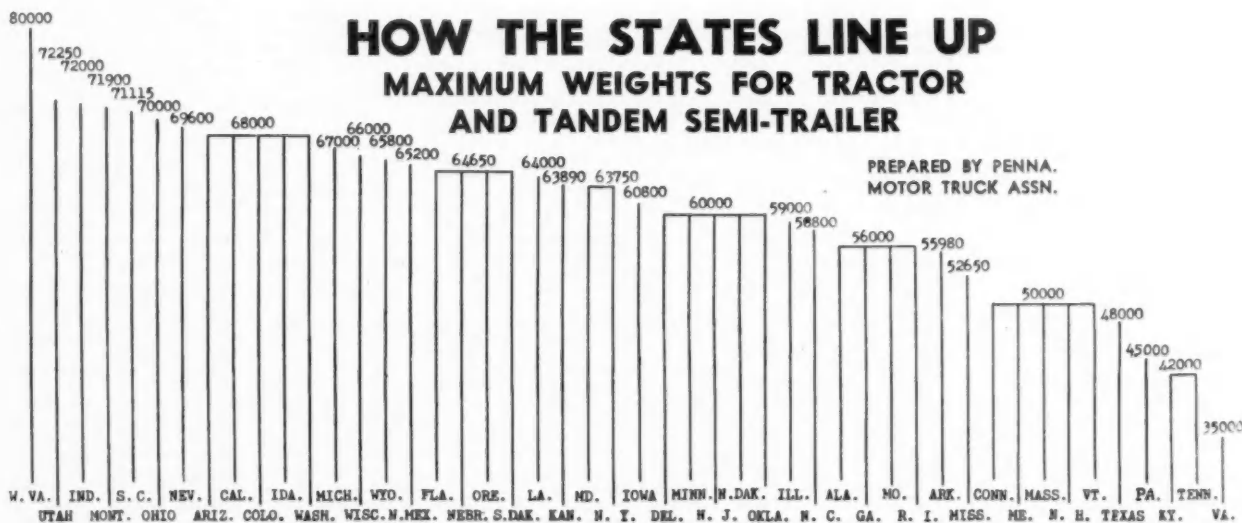
KY.—Limits shown are permissible on designated highways; otherwise limits are: height 11½ ft.; length—truck 26½ ft.; length—semi-trailer com-

bination 30 ft.; gross weight 18,000 lbs.

N. C.—Over 40,000 lbs. must have 300 cubic inches piston displacement. Gross weight limit on most secondary highways 16,000 lbs. for two axles and 24,000 lbs. for 3 axles.

VA.—Two-axled vehicles with six-wheels permitted

32,000 lbs. gross; otherwise 24,000 lbs. Minimum axle spacing 48 in. If gross weight over 35,000 lbs. Weight limits shown are for designated highways only; on other highways axle limit is 16,000 lbs. and gross weight limit for three or more axle vehicles or combinations is 35,000 lbs.



Safety Equipment

Required & Permitted on Trucks, Truck-Tractors, Trailers & Buses

**As Specified in I.C.C. Safety Rules & Regulations, State Motor Vehicle Laws
& Official Rulings . . . and Compiled by National Highway Users Conference**

TABULATION OF SAFETY REQUIREMENTS ON PAGES 124 & 125

EXPLANATION OF I.C.C. REFERENCES

‡—The I.C.C. Motor Carrier Safety Regulations apply to "Automotive Safety Equipment" on vehicles operated by common and contract carriers ("for hire" carriers) of persons or property and by private carriers of property, when operated regularly in interstate or foreign commerce, except when operated wholly within a municipality, between contiguous municipalities, or within a zone adjacent to and commercially a part of any such municipality or municipalities. When vehicles of common, contract or private carriers are transporting explosives or other dangerous articles the last-mentioned excep-

tion does not apply.

†—Requires "a device or other means of preventing or removing ice or frost" from windshield.

*—I.C.C. neither approves nor disapproves any individual required item. Its Motor Carrier Safety Regulations, however, set forth certain constructional details or performance standards to which certain items must conform. Reference should be made to the Motor Carrier Safety Rules for complete details.

COLOR AND REQUIREMENT SYMBOLS

A—Amber
G—Green
R—Red
N—No
NP—Not Permitted
NR—Not Required
NS—Not Specified

NSM—Not Specifically Mentioned
Y—Yes
Ye—Yellow
W—White
/—When used between two letters or numbers means "or."
Example—2/4 means "2 or 4."

GENERAL FOOTNOTES

- a—Prohibits red light visible from in front of vehicle.
- b—Prohibits red or green light visible from in front of vehicle.
- c—Tail lamp or separate lamp shall illuminate rear license plate with white light.
- d—Must be located and constructed so as to illuminate rear license plate with white light.
- e—May be incorporated in tail lamp.
- f—Semaphores required on school buses.
- g—One or both may be incorporated in tail lamp or lamps.
- h—Number plate must be illuminated with white light.
- i—Also two yellow reflectors on front of truck 70 in. or more in width and bus over 7 passengers.
- j—Also one amber reflector on front of vehicle.
- k—One may be part of tail lamp.
- m—Reflectors may be substituted.
- n—Reflectors may be used when vehicle has acetylene lamps.
- p—White, green or amber. Where green originally used, may be continued till replacements are necessary.
- r—Yellow or orange flags required.
- s—On vehicles over 45 feet long, rear clearance and marker lamps shall be in combination.
- t—One green marker lamp every 10 feet on combinations over 33 feet long.

- u—Vehicles manufactured after December 31, 1949, shall have double wipers.
- y—Trailer and semi-trailers shall have one lamp on front visible from both sides.
- z—Clearance and marker lamps may be in combination.
- aa—Every vehicle 72 in. or more wide must have 2 amber or clear front, and 2 amber, clear or red rear reflectors. Clearance lamps may be substituted. Reflectors must be approved. Clearance lamps need not be approved.
- cc—Vehicles manufactured after January 1, 1943, shall have double wipers.
- dd—On interstate buses—green lights adjacent to destination sign or near upper corners;
On intrastate buses—purple lights in same locations.
- ee—Double wipers required on all school buses.
- ff—Two yellow stop lamps required on all buses.
- ii—Clearance and marker lamps may be in combination. When in combination there must be one such lamp on each side, midway of vehicle.
- kk—Permits tinted other than red.
- xx—Fog lamps are included within the term "Auxiliary Driving Lamps" and are treated accordingly.

Data Revised to March 15, 1952

SAFETY EQUIPMENT REQUIREMENTS (Cont.)

REFERENCES AND SYMBOLS EXPLAINED ON PAGE 135

SAFETY EQUIPMENT																																
TO BE MOUNTED ON VEHICLES																																
Jurisdictional Control Over Equipment	HEAD LAMPS			TAIL LAMPS			STOP LAMPS			REAR REFLECTORS			CLEARANCE LAMPS			SIDEMARKER LAMPS			IDENTIFICATION LAMPS			DIRECTION SIGNALS			SIDE REFLECTORS							
	Number	Color	Must Be Approved	Number	Color	Must Be Approved	Number	Color	Must Be Approved	Number	Color	Must Be Approved	Color		Number	Color		Number (Sets)	Color		Number	Color		Number	Color		Number	Color				
													Front	Rear		Front	Rear		Front	Rear		Front	Rear									
I.C.C.	2	NS	*	1	R	*	1e	R/ye	*	2g	R	*	2/4z	A	R	*	2/4z	A	R	*	NR			NR				2/4	A	R	*	
Ala.	2	W/A	Y	1d	R	Y	1	R/ye	Y	2	R	N	4	W	R	N	NR			NR		NS	NS	R	Y	2	NS	R	N			
Ariz.	2	W/A	Y	1c	R	Y	1	R/ye	Y	2	R	Y	4	A	R	Y	2/4	A	R	Y	NR		4	A	R	Y	2	A	R	Y		
Ark.	2	NSb	Y	1c	R	Y	1	R/ye	Y	1e	R	Y	2	G	R	Y	4m	G	R	Y	3	G	R	Y	4	Ye	Ye/R	Y	4	G	R	Y
Calif.	2	W/A	Y	1c	R	Y	1e	A/R	Y	1/2k	R	Y	4	A	A/R	Y	NR			NR		4	A/W	A/R	Y	NR						
Colo.	2	W/A	Y	1c	R	Y	1e	R	Y	2k	R	Y	4	A	R	Y	4	A	R	Y	NR		4	Ye/R	Ye/R	Y	4	A	R	Y		
Conn.	2	W/A	Y	1c	R	Y	1	Rff	Y	1/2k	A/RW	Y	4sa	A/W	A/RW	Y	NR			2	dd	NR	N	4	Ye/A	Ye/A	Y	4	A/W	W/R	Y	
Del.	2	W	Y	1d	R	Y	1	R	Y	NR			4	A	R	Y	1	t		Y	NR		4	A	R	Y	NR					
D. of C.	2	NSa	Y	1c	R	Y	1e	R/ye	Y	2	R	Y	4	A	R	Y	4	A	R	Y	NR		4	W/A	R/A	Y	4	A	R	Y		
Fla.	2	NSa	N	1c	R	N	1e	R/ye	Y	2	R	N	2/4z	A	R	N	2/4z	A	R	N	NR		NS		R/Ye	Y	4	A	R	N		
Ga.	2	NSa	N	1c	R	N	1	A/R	N	2e	R	Y	2/4z	A	R	Y	2/4z	A	R	Y	NR		NR			4	A	R	N			
Idaho	2	W	Y	1d	R/ye	Y	1e	A/Rye	Y	2g	R	Y	2/4z	A	R	Y	2/4z	A	R	Y	NR		NS	Ye	Ye/R	Y	4	A	R	Y		
Ill.	2	Ye/AW	Y	1	R	Y	1	Ye/R	Y	1j	R	Y	3/6	G	R	Y	NS	NS	NS	N	3	G	R	N	NS	A	Ye/R	Y	4	A	R	Y
Ind.	2	W	N	1c	R	N	1fe	R/Ye	N	2l	R	N	2/4	A	R	Y	2/4	A	R	Y	NR		4f	Ye	Ye/R	N	2/4	A	R	N		
Iowa	2	Wkk	Y	1c	R	Y	1	Ye/R	Y	2k	R	Y	2/4	Ye/WA	R	Y	2/4	Ye/AW	R	Y	3	Ye/AW	R	Y	NR			2/4	p	R	Y	
Kan.	2	W	Y	1c	R	Y	1	Ye/R	Y	1e	R	Y	2	A	R	Y	4m	A	R	Y	3	A	R	Y	NS	Ye	Ye/R	Y	4	A	R	N
Ky.	2	Wkk	N	1n	R	N	1	Ye/R	N	1e			2/4	G/W	R	N	NR			NR		NS	NS	Ye/R	Y	NR						
La.	2	NSb	Y	1d	R	Y	1	R	Y	NR			2	A	R	Y	4	A	NS	Y	NR		4	A	R	Y	NR					
Me.	2	W	Y	1c	R	Y	1	R/A	Y	1e	R	Y	2/3m	A/GW	R	Y	NR			NR		NS			Y	NR						
Md.	2	Wkk	Y	1c	R	Y	1	A/R	Y	1e	R	Y	4m	A	R	Y	4mz	A	R	Y	NR		4	A	A/R	Y	NR					
Mass.	2	Ye/AW	Y	1	R	Y	NR			1	R	Y	2	G	R	N	NR			NR		NR			NR							
Mich.	2	W	N	1c	R	N	1	A/R	N	2	R	N	4z	A	R	N	4z	A	R	N	NR		NS	NS	NS	N	2/4	A	R	N		
Minn.	2	W	Y	1c	R	Y	1	Ye/R	Y	1e	R	Y	4il	A/W	R	Y	4il	A/W	R	Y	NR		4	Ye	Ye/R	Y	NR					
Miss.	2	W	Y	1c	R	Y	1	A/R	Y	2	R	Y	4	A	R	Y	4	A	R	Y	NR		4	A	A/R	Y	4	G	R	Y		
Mo.	2	W	Y	1c	R	Y	1	NS	Y	2/4	R	Y	2/4	A	R	Y	2/4	A	R	N	NR		NS	NS	NS	N	2	A	R	N		
Mont.	2	W	N	1d	R	N	NR			2	R	N	4m	Ye/WG	R	N	NR			NR		NR			NR							
Nebr.	2	NSb	Y	1	R	Y	1	R	Y	1	R	N	2m	A/G	R	Y	NR			NR		NS	NS	R	Y	NR						
Neov.	2	Wkk	N	1	R	N	1e	Ye/RA	Y	2	R	N	2/4	A	R	N	2/4	A	R	N	NR		NR			2	A	R	N			
N. H.	2	NS	Y	1d	R	Y	1	NS	Y	2	R	Y	4s	A	R	Y	2s	A	R	Y	NR		NS	NS	NS	Y	4	A	R	Y		
N. J.	2	Ye/AW	Y	1c	R	Y	1	R	Y	1/2k	R	Y	NR			NR			NR		NR		4	Ye/A	Ye/A	Y	NR					
N. M.	2	NS	Y	1d	R	Y	1e	Ye/R	Y	1/2k	R	Y	2/4	A	R	Y	4	A	R	Y	NR		4	A	R/A/Ye	Y	4	A	R	Y		
N. Y.	2	Ye/W	Y	1h	R	Y	1	R	Y	1/2ik	R	Y	NR			NR			NR		NR		4	W/A	A	Y	NR					
N. C.	2	NSb	Y	1d	R	Y	1	A/R	Y	1	R	Y	4	A	R	Y	NR			NR		NS	NS		Y	NR						
N. D.	2	NSb	Y	1	R	Y	1	R	Y	NR			2	A	R	Y	NR			NR		NS	NS	R	Y	NR						
Ohio	2	W	Y	1c	R	N	1	Ye/R	Y	2	R	N	4	A	R	N	4	A	R	N	NR		NS			Y	4	A	R	N		
Okla.	2	W	Y	2c	R	Y	1e	R/AYe	Y	2e	R	Y	4	A	R	Y	4	A	R	Y	NR		NS	Ye/A	A/R/Ye	Y	4	A	R	Y		
Ore.	2	NSb	Y	1c	R	Y	1	Ye/R	Y	2k	R	Y	2/4	A	R	Y	2/4	A	R	Y	NR		2/4	A	R	Y	2/4	A	R	Y		
Penna.	2	NSa	Y	1c	R	Y	1	Ye/R	Y	1	R	Y	2m	A	R	N	4m	A	R	N	3	A	R	N	2/4	Ye/A	Ye/R	Y	4	A	R	Y
R. I.	2	A/W	Y	1c	R	Y	1	Ye/R	Y	2	R	Y	2/4	A	R	Y	4	A	R	Y	NR		4	Ye/A	Ye/A	Y	4	A	R	Y		
S. C.	2	W	N	1c	R	N	1	Ye/R	Y	1e	R	N	2/4z	A	R	N	2/4z	A	R	N	NR		4	A	Ye/R	Y	2/4	A	R	Y		
S. D.	2	NSa	Y	1c	R	Y	1	Ye/R	Y	1e	R	Y	2	W	R	Y	NR			3	G	R	Y	4	A	Ye/R	Y	NR				
Tenn.	2	NSa	Y	1	R	Y	1	A/R	Y	2	R	N	4	A	R	Y	4	A	R	Y	NR		NR			4	A	R	Y			
Tex.	2	W	Y	1d	R	N	1	Ye/R	Y	2	R	Y	2/4z	A	R	Y	2/4z	A	R	Y	NR		4	A	R/AYe	Y	2/4	A	R	Y		
Utah	2	NSa	Y	1c	R	Y	1e	Ye/R	Y	2g	R	Y	4	A	R	N	4	A	R	N	NR		4	A	Ye/R	Y	4	A	R	Y		
Vt.	2	NS	Y	1d	R	Y	NR			NR			1	G	R	Y	NR			NR		NR			NR							
Va.	2	W	Y	1c	R	Y	1	R	Y	NR			4	A	R	Y	NR			1y	W	NR	Y	4	A	A/R	Y	NR				
Wash.	2	NSa	Y	2c	R	Y	1e	R	Y	2e	R	Y	4	Ye	R	Y	2/4z	A	R	Y	NR		4	Ye	Ye/R/A	Y	4	Ye/A	R	Y		
W. Va.	2	NSa	Y	1c	R	Y	1e	R/Ye	Y	2g	R	Y	2/4z	A	R	Y	2/4z	A	R	N	1y	W	NR	N	NS		R/AYe	Y	4	A	R	N
Wisc.	2	W	N	1m	A/R	N	1m	A/R	N	1	R	N	2/4	A	R	N	NR			NR		4	W/A	R/A	Y	4	A	R	N			
Wyo.	2	NSa	Y	1d	R	Y	1	Ye	Y	1	R	Y	2m	G	R	Y	2m	G	NS	N	NR		4	Ye	Ye	Y	4	A	R	Y		

TRANSMISSION

TRANSMISSIONS MAKE AND MODEL	No. of Forward Speeds	Direct Drive on	GEAR RATIOS						Power Take-off, Opening	
			Low	Second	Third	Fourth	Fifth	Reverse		High Reverse
AUTOCAR										
DF-4, DFU-4	4	4	5.78	3.52	1.83	1.00		7.23		R-L
DF-5, DFU-5	5	4	5.78	3.52	1.83	1.00	.72	7.23		R-L
TF-4, UTF-4	4	4	5.90	3.60	1.84	1.00		7.37		R-L
TF-5, UTF-5	5	4	5.90	3.60	1.84	1.00	.75	7.37		R-L
BH-31 Aux.	3	2	1.33	1.00	.85					R
BH-21 Aux.	2	2	1.47	1.00						R
BROWN-LIPE (1)										
*5331	3	3	3.80	1.91	1.00			4.24		
3541	4	4	4.57	2.42	1.73	1.00		4.67		
3052	4	5	7.55	4.16	2.45	1.45	1.00	7.36		R
3053	5	4	6.00	3.32	1.94	1.00	.793	5.84		R
8241	4	4	6.63	3.19	1.70	1.00		7.53		R-L
8241-A	4	4	7.15	3.44	1.83	1.00		8.13		R-L
8241-B	4	4	4.32	2.67	1.67	1.00		4.90		R-L
8241-C	4	4	3.90	2.42	1.50	1.00		4.43		R-L
8440	4	3	3.90	1.88	1.00	.754		4.43		R-L
8041	4	4	6.25	3.47	1.75	1.00		6.39		R-L
8045	4	4	6.25	3.47	1.75	1.00		6.39		R-L
8241, 8245	4	4	5.19	2.88	1.72	1.00		5.31		R-L
8440, 8445	4	3	3.67	1.85	1.00	.77		3.75		R-L
8440-A	4	3	3.67	1.85	1.00	.67		3.75		R-L
8445-A										
*4652	5	5	7.40	4.00	2.47	1.46	1.00	7.84		R-L
*4652-A	5	5	7.40	4.27	2.47	1.46	1.00	7.84		R-L
*4752	5	5	6.10	3.30	1.81	1.35	1.00	6.46		R-L
*4753	5	4	6.10	3.30	1.81	1.00	.77	6.46		R-L
*4753-A	5	4	6.10	3.30	1.81	1.00	.88	6.46		R-L
*4852	5	5	5.08	2.93	1.79	1.34	1.00	5.37		R-L
*4853	5	4	5.08	2.93	1.79	1.00	.78	5.37		R-L
*6352	5	5	7.31	4.09	2.41	1.44	1.00	7.33		R-L
*6452	5	5	6.07	3.40	1.79	1.34	1.00	6.09		R-L
*6453	5	4	6.07	3.40	1.79	1.00	.76	6.09		R-L
*6453-A	5	4	6.07	3.40	1.79	1.00	.83	6.09		R-L
*6852	5	5	5.08	3.05	1.78	1.33	1.00	5.10		R-L
*6853	5	4	5.08	3.05	1.78	1.00	.695	5.10		R-L
8051, 8055	5	4	6.25	3.47	1.75	1.00	.67	6.39		R-L
8051-A, 8055-A	5	4	6.25	3.47	1.75	1.00	.83	6.39		R-L
8251, 8255	5	4	5.19	2.88	1.72	1.00	.69	5.31		R-L
8251-A	5	4	5.19	2.88	1.72	1.00	.795	5.31		R-L
8255-A										
5531-Aux.	3	2	2.00	1.00	.72					R-L
5531-A Aux.	3	2	1.52	1.00	.72					R-L
5531-B Aux.	3	2	2.36	1.00	.85					R-L
5531-C Aux.	3	2	1.28	1.00	.85					R-L
6231 Aux.	3	2	2.14	1.00	.69					R-L
6231-A Aux.	3	2	1.24	1.00	.66					R-L
6231-B Aux.	3	2	2.14	1.00	.69					R-L
6231-C Aux.	3	2	1.24	1.00	.66					R-L
6231-D Aux.	3	2	2.14	1.00	.74					R-L
6231-E Aux.	3	2	1.24	1.00	.74					R-L
6231-F Aux.	3	2	1.50	1.00	.66					R-L
8031-A Aux.	3	2	2.59	1.00	.84					R-L
8035-A										
8031-B Aux.	3	2	2.59	1.00	.79					R-L
8035-B										
8031-C Aux.	3	2	2.59	1.00	.75					R-L
8035-C										
8031-D Aux.	3	2	2.24	1.00	.84					R-L
8035-D										
8031-E Aux.	3	2	2.24	1.00	.79					R-L
8035-E										
8031-F Aux.	3	2	2.24	1.00	.75					R-L
8035-F										
8031-G Aux.	3	2	1.29	1.00	.84					R-L
8035-G										
8031-H Aux.	3	2	1.29	1.00	.79					R-L
8035-H										
8031-J Aux.	3	2	1.29	1.00	.75					R-L
8035-J										
8031-K Aux.	3	3	2.59	1.34	1.00					R-L
8035-K										
8031-L Aux.	3	3	2.24	1.34	1.00					R-L
8035-L										
CHEVROLET										
3-Speed	3	3	2.94	1.68	1.00			2.94		No
4-Speed	4	4	7.06	3.58	1.71	1.00		6.78		L
CLARK										
142-T	3		3.46	1.71	1.00			4.25		R
186-F	4		6.35	3.31	2.49	1.00		7.54		R-L
187-F	4		5.00	2.61	1.89	1.00		5.94		R-L
204-V	5		7.58	4.35	3.05	1.72	1.00	7.51		R-L
204-VO	5		6.06	3.50	1.80	1.00	.799	6.00		R-L
207-VO	5		6.06	3.50	1.80	1.00	.86	6.00		R-L
208-V	5		7.58	4.38	3.06	1.48	1.00	7.51		L
231-F	4		6.35	3.30	1.97	1.00		7.41		R-L
233-F	4		6.35	3.38	1.73	1.00		7.41		R-L
271-T	3		4.08	1.63	1.04			4.50		No
290-V	5		7.88	4.41	2.83	1.48	1.00	7.88		R-L
290-VO	5		7.00	3.93	1.90	1.00	.788	7.00		R-L

TRANSMISSIONS MAKE AND MODEL	No. of Forward Speeds	Direct Drive on	GEAR RATIOS						Power Take-off, Opening	
			Low	Second	Third	Fourth	Fifth	Reverse		
CLARK—cont.										
291-V	5		7.00	3.83	2.34	1.54	1.00	7.00		R-L
330-F	4		4.88	3.09	1.73	1.00		4.06		Ne
334-F	4		4.35	2.76	1.71	1.00		3.62		Ne
333-V	4		5.22	3.30	2.05	1.42	.96	4.45		Ne
185-F	4		6.35	3.31	1.73	1.00		7.54		R-L
200-V	4		7.58	4.38	2.40	1.48	1.00	6.11		R-L
200-VO	5		7.58	3.50	1.91	1.00	.799	6.87		R-L
205-V	5		6.06	3.50	2.40	1.48	1.00	7.61		R-L
205-VO	4		6.06	3.50	1.91	1.00	.799	6.00		R-L
230-F	4		5.00	3.07	1.71	1.00		5.83		R-L
270-V	5		7.88	4.46	2.63	1.48	1.00	7.88		R-L
270-VO	5		7.00	3.97	1.90	1.00	.768	7.00		R-L
328-V	5		8.05	4.34	2.80	1.67	1.00	8.05		R-L
328-VO	5		7.08	3.82	1.85	1.00	.768	7.08		R-L
265-V-1	5		7.58	4.38	2.40	1.48	1.00	7.51		R-L
267-V-1	5		6.06	3.50	1.80	1.18	1.00	6.00		R-L
267-VO-1	5		6.06	3.50	1.80	1.00	0.96	6.00		R-L
333F	4		4.88	3.09	1.73	1.00		4.06		Ne
DODGE										
N.P.-88490, 88985, 88770	3	3	3.3	1.78	1.00			4.3		Ne
N.P.-88500, 88790, 39760	4	4	6.4	3.09	1.69	1.00		7.82		R
N.P.-88570, 89420, 89890	4	4	6.4	3.09	1.69	1.00		7.61		R
N.P.-89410, 89430	5	5	7.41	4.32	2.38	1.52	1.00	7.32		R
N.P.-88220, 88450	5	5	7.58	4.38	2.39	1.48	1.00	7.51		R-L
Clark-290V2	5	5	7.88	4.41	2.63	1.48	1.00	7.88		R-L
FORD										
1C-A	3	3	2.78	1.62	1.00			3.68		No
2C-A, 2D-A, 2J-A	3	3	3.71	1.87	1.00			4.59		No
2C-B 2T-R, 2MTH-A	4	4	6.40	3.09	1.69	1.00		7.820		R
7ED	4	4	6.06	3.50	1.80	1.00	.799	6.00		R-L
7EDH	5	5	7.58	4.38	2.40	1.46	1.00	7.51		R-L
F.W.D.										
H	5	5	8.23	4.40	2.46	1.41	1.00	8.45		R-L
H	5	4	5.82	3.13	1.75	1.00	.7264	6.07		R-L
H-Aux	2	2	1.25	1.00						R-L
H-Aux	2	2	2.62	1.00						
U. S.	5	5	9.95	5.61	3.15	1.85	1.00	8.97		R-L
U-Aux	2	2	1.25	1.00						
U-Aux	2	2	2.62	1.00						
M	5	5	7.36	4.42	2.74	1.47	1.00	1.00		R-L
M-Aux	2	2	2.12	1.00						
WG-T9A	4	4	5.90	3.09	1.69	1.00		7.213		R
6										
STUDEBAKER										
673519, 679146, 679807	3	3	3.34	1.85	1.00			4.53		
678564, 679226	4	3	3.34	1.85	1.00	.700		4.53		
680437, 680439	4	4	6.40	3.09	1.69	1.00		7.82		R
680438	4	4	5.90	3.09	1.69	1.00		7.21		R
WARNER										
T9	4	4	6.40	3.09	1.69	1.00		7.82		R
T9A	4	4	5.90	3.09	1.69	1.00		7.213		R
T9B	4	4	6.40	3.09	2.21	1.00		7.82		R
T9C	4	4	6.40	4.07	2.89	1.00		7.82		R
T87D	3	3	3.714	1.871	1.00			4.588		No
T90A-T90C	3	3	2.798	1.551	1.00			3.796		No
T90B	3	3	3.34	1.85	1.00			4.531		No
T90D	3	3	3.339	1.851	1.00			4.531		No
T90E	3	3	3.34	1.851	1.00			4.531		No
T97	4	4	6.398	3.082	1.688	1.00		7.820		R
T98	4	4	6.398	3.082	1.688	1.00		7.820		R
WATSON										
41-Aux	3	2	1.26	1.00	.830					Yes
42-Aux	3	2	1.49	1.00	.830					Yes
43-Aux	3	2	2.11	1.00	.830					Yes
44-Aux	3	2	1.26	1.00	.750					Yes
45-Aux	3	2	1.49	1.00	.750					Yes
46-Aux	3	2	2.11	1.00	.750					Yes
47-Aux	3	3	1.49	1.26	1.00					Yes
48-Aux	3	3	2.11	1.26	1.00					Yes
WHITE										
424B	4	4	6.35	3.31	1.73	1.00		7.54		R
418B	4	4	6.35	3.38	1.73	1.00		7.41		R-L
502B	5	5	7.58	4.38	2.40	1.48	1.00	7.88		R-L
502B	5	4	6.06	3.60	1.91	1.00	.799	6.00		R-L
507B	5	5	7.88	4.41	2.63	1.48	1.00	7.88		R-L
507B	5	4	7.00	3.93	1.90	1.00	.768	7.00		R-L
506B	5	5	8.06	4.67	2.82	1.38	1.00	8.12		R-L
506B	5	4	8.37	3.40	1.74	1.00	.768	6.40		R-L

*—Transmission Synchronized.

Model	No. Speeds	Direct Drive In	Over Drive In	GEAR RATIOS										Low Rev.	High Rev.	Installation Dimension Inches	Weight Lbs.	Control C-Forward F-Remote R	Clutch Housing Size	Oil Capacity In Pints	PTO Opening	Relative Speed PTO Gear to Input RPM	
				1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th									Right	Left
FULLER																							
4-A-86	4	4		6.54	3.27	1.76	1.00							7.24		23	420	C or R	1.2	17	R & L	.553	.553
4-B-86	4	4th		5.55	3.27	1.76	1.00							6.56		23	420	C or R	1.2	17	R & L	.553	.553
4-A-860	4	3rd	4th	3.72	1.86	1.00	.76							4.12		23	420	C or R	1.2	17	R & L	.973	.973
4-A-112	4	4th		6.54	3.27	1.76	1.00							6.49		25	525	F or R	1.2	21	R & L	.553	.302†
5-A-33	5	5th		7.53	4.30	2.52	1.42	1.00						7.37		20	210	C or R	2.34	11	R	.271	
5-A-330	5	4th	5th	6.10	3.48	1.795	1.00	.768						5.96		20	210	C or R	2.34	11	R	.336	
5-B-33	5	5th		7.53	4.30	2.52	1.42	1.00						7.37		20	218	C or R	2.34	11	R & L	.465	.465
5-B-330	5	4th	5th	6.10	3.48	1.795	1.00	.768						5.96		20	218	C or R	2.34	11	R & L	.575	.575
5-A-43	5	5th		8.03	4.61	2.46	1.41	1.00						8.00	4.71*	22	330	C or R	1.23	16	R & L	.444	.215
5-A-430	5	4th	5th	6.52	3.33	1.77	1.00	.771						6.50	3.33*	22	330	C or R	1.23	16	R & L	.548	.265
5-A-62	5	5th		8.08	4.67	2.62	1.38	1.00						8.12	4.74*	24	370	C or R	1.23	24	R & L	.429	.429
5-A-620	5	4th	5th	7.07	3.50	1.72	1.00	.776						7.11	3.55*	24	370	C or R	1.23	24	R & L	.489	.489
5-A-65	5	5th		8.08	4.67	2.62	1.38	1.00						8.12	4.74*	24	411	F or R	1.2	24	R & L	.429	.429
5-A-650	5	4th	5th	6.37	3.40	1.74	1.00	.768						6.40	3.35*	24	411	F or R	1.2	24	R & L	.543	.543
5-C-65	5	5th		8.08	4.67	2.62	1.38	1.00						8.12	4.74*	24	411	C or R	1.2	24	R & L	.429	.429
5-C-650	5	4th	5th	6.37	3.40	1.74	1.00	.768						6.40	3.35*	24	411	C or R	1.2	24	R & L	.543	.543
5-C-72	5	5th		7.33	4.43	2.62	1.38	1.00						7.33		25	465	C or R	1.2	24	R & L	.429	.229
5-C-720	5	4th	5th	6.37	3.40	1.74	1.00	.75						6.42		25	465	C or R	1.2	24	R & L	.543	.291
5-A-1120	5	4th	5th	6.54	3.27	1.76	1.00	.744						6.49		31	681	F or R	1.2	29	R & L	.553	.302†
5-F-1220	5	4th	5th	6.54	3.356	1.748	1.00	.744						5.06		31	687	F or R	1	29	R & L	.553	.387†
5-FS-1220†	5	4th	5th	2.58	1.928	1.386	1.00	.747						3.035		31	705	F or R	1	29	R & L	.698	.488
10-FA-65	10	10th		18.567	10.731	8.08	6.02	4.67	3.17	2.62	2.298	1.38	1.00	18.659	8.12	39	766	F or R	1.2	31	R & L	.429	.429
10-FA-650	10	9th	10th	14.638	7.822	6.37	3.993	3.404	2.298	1.81	1.738	1.00	.788	14.707	6.40	39	766	F or R	1.2	31	R & L	.543	.543
10-FB-65	10	10th		10.609	8.08	6.13	4.67	3.44	2.62	2.219	1.69	1.313	1.00	10.661	8.12	39	766	F or R	1.2	31	R & L	.429	.429
10-FB-650	10	9th	10th	8.364	6.37	4.469	3.404	2.282	1.738	1.313	1.034	1.00	.788	8.403	6.40	39	766	F or R	1.2	31	R & L	.543	.543
10-CA-65	10	10th		18.567	10.731	8.08	6.02	4.67	3.17	2.62	2.298	1.38	1.00	18.659	8.12	39	766	C or R	1.2	31	R & L	.429	.429
10-CA-650	10	9th	10th	14.638	7.822	6.37	3.993	3.404	2.298	1.81	1.738	1.00	.788	14.707	6.40	39	766	C or R	1.2	31	R & L	.543	.543
10-CB-65	10	10th		10.609	8.08	6.13	4.67	3.44	2.62	2.219	1.69	1.313	1.00	10.661	8.12	39	766	C or R	1.2	31	R & L	.429	.429
10-CB-650	10	9th	10th	8.364	6.37	4.469	3.404	2.282	1.738	1.313	1.034	1.00	.788	8.403	6.40	39	766	C or R	1.2	31	R & L	.543	.543
10-A-1120	10	9th	10th	15.04	7.52	6.54	4.05	3.27	2.30	1.76	1.711	1.00	.744	14.93	6.49	43	960	F or R	1.2	36	R & L	.553	.302†
10-B-1120	10	8th	9-10	h 8.59	6.54	4.04	3.08	2.31	1.76	1.31	1.00	.835	.636	8.52	6.49	43	960	F or R	1.2	36	R & L	.553	.302†
10-F-1220	10	8th	9-10	6.526	4.97	3.923	2.985	2.296	1.748	1.313	1.00	.835	.636	5.029	3.83	43	982	F or R	1	36	R & L	.553	.387†
R-95-C†	10	10th		9.70	7.45	5.82	4.49	3.55	2.73	2.10	1.64	1.27	1.00	12.50	3.52	40	827	C or R	1.2	32	R & L	.628	.411
R-950-C†	10	9th	10th	7.45	5.82	4.49	3.55	2.76	2.10	1.64	1.27	1.00	.779	9.89	2.78	40	804	C or R	1.2	32	R & L	.628	.628
UR	2	1st R		1.00										1.00		14	152		1.23	8			
UR 1.63	2	2nd		1.63	1.00											14	152		1.23	8			
AR	2	1st R		1.00										1.00		11	120	R		8			
AR 1.63	2	2nd		1.63	1.00											11	120	R		8			
2-A-62	2	2nd		1.58	1.00											9	165	R		7			
2-B-62	2	2nd		1.33	1.00											9	165	R		7			
2-A-92	2	2nd		2.298	1.00											16	315	R		12			
2-B-92	2	2nd		1.313	1.00											16	315	R		12			
3-A-65	3	2nd	3rd	2.221	1.00	.754										19	270	R		13	R & T‡	.941	
3-B-65	3	2nd	3rd	1.239	1.00	.804										19	270	R		13	R & T‡	.941	
3-A-92	3	2nd	3rd	2.09	1.00	.754										22	350	R		17	R & T‡	1.036	
3-B-92	3	2nd	3rd	1.235	1.00	.836										22	350	R		17	R & T‡	1.036	
3-T-92	3	2nd	3rd	2.09	1.00	.754										22	553	R		24			
PD-45	2	2nd		1.90	1.00											20	328	R		14			
3-BX	1			1.08												65	R						
3-PT-65	2			1.03												100	R						

ABBREVIATIONS

- *—Transmissions Synchronized.
†—Close Spaced Ratios. ‡—See 3-PT-65. §—See 3-BX.
‡—Varies with Rev. Gear Ratios.
▲—Additional Ratio Optional at Extra Cost.

▲—Dimension, Face of Clutch Housing to Inside End of Companion Flange.

(T)—Spicer Mfg. Co.

L—Left side opening.

R—Right side opening.

R-L—Right and left side openings.

Transportation Engineering Formulas

PISTON DISPLACEMENT

Piston Displacement in cu. in. = $B \times B \times .7854 \times S \times \text{No. of Cylinders}$

B = Bore
S = Stroke

.7854 = Constant comprising the conversion of the area of a square to the area of a circle of the same dimensions

VEHICLE SPEED

$\text{MPH} = \frac{\text{RPM} \times R}{168 \times \text{FGR}}$

MPH = Miles Per Hour

RPM = Engine Revolutions Per Minute

R = Rolling Radius in Inches

FGR = Final Gear Ratio

168 = A constant comprising the conversion of rolling radius in inches to wheel circumference in feet; wheel revolutions per minute to wheel revolutions per hour; feet per hour to miles per hour

HORSEPOWER

Maximum Net Horsepower (maximum gross horsepower less power consumed by engine accessories) is the only horsepower that should be used in transportation engineering formulas, and can be determined only by using a dynamometer or may be procured from the manufacturer

MAX. NET ENGINE TORQUE

Torque in lb. ft. = $.50 \times \text{cu. in. Piston Displacement}$. (This is approximate and should be used only when actual torque is not known).
.50 = Average figure based on analysis of a number of torque curves.

AMA HORSEPOWER

(For License Purposes Only)

$\text{AMA HP} = \frac{B \times B \times \text{No. of Cyl.}}{2.5}$

B = Cylinder Bore

2.5 = Constant based on average engine in 1906

MAXIMUM NET TORQUE

$\text{Max. Net Torque} = \frac{\text{Torque at Peak HP} \times 5}{4}$

(This is approximate and should be used only when actual net torque is not known.)

5 and 4 = Figures based on an analysis of a number of torque curves

TORQUE AT PEAK HP

$\text{Torque at Peak HP} = \frac{\text{HP} \times 5252}{\text{RPM}}$

5252 = Constant resulting from the conversion of torque and RPM into horsepower

HP = Maximum net horsepower (See Horsepower formula)

Peak HP = Maximum useful horsepower

Specifications for THIRD AXLES

and TRAILER SUSPENSIONS

NOTES ON HEADINGS

Column 1.—*—All makes.
E—Dualload.

Column 2. The capacity of the third axle is not to be confused with the total capacity made possible on the converted vehicle.

Column 3. The price of the unit includes the standard brakes specified in brake column and frame extensions that extend forward under the cab. Tires and brake (air or vacuum) power are not included in price nor is the cost of installation.

Column 4. Weight of third axle unit includes all appurtenances and maximum tires.

*—Does not include axle.

COLUMN 14

@—Airbrake 16½x5½.

Column 15 gives brake lining area of attachment unit only.

ABBREVIATIONS

○—46½ or 48½ axle spacing optional.

COLUMN 9

Chev—Chevrolet Tim—Timken
Shu—Shuler Wag—Wagner Hi-Tork

COLUMN 10

D—Driving Sr—Solid round
Re—Rectangular Sq—Square
SF—Standard Forge T—Tubular

COLUMN 12

A—Air M—Mechanical
B—Bendix O—Own
C—Chevrolet V—Vacuum Power
F—Ford W—Westinghouse
H—Hydraulic †—Own or Westinghouse optional
L—Lockheed

COLUMN 13—CA—Cast Alloy Iron

††—On application.

(w)—New pusher-type axle recently introduced by Detroit Automotive Products Corp.

(x)—Patented 4-wheel chain drive available for all Truktor units.

(y)—All Truxmore units equipped with radius rods on driving axle and load distribution may be adjusted within limits shown in cols. 6 & 7.

Note 1. Two-axle self-steering undercarriage uses any standard trailer axle.

*—Chains and sprockets available—optional at extra charge.

(a)—Long slip-spline joint supplied for drive axle in place of radius rods.

(e)—Depends upon manufacturer.

(f)—Optional equipment.

(g)—Round, square or I-sectional axles can be used.

THIRD AXLE MAKE AND MODEL and Truck Model Adapted to	Capacity (Lb.) See Explanatory Notes	Price (f. o. b. factory)	Weight (Lb.) with Max. Tires, Frame Extension, Etc.	Maximum Tire Size	LOAD-DIS- TRIBUTION RANGE		Axle Spacing (in inches) (with maximum tire)	AXLE DATA			BRAKES (Standard)				Number of Points of Frame Support	Spring Size or Number Leaves Added	Spline Diameter (at inner bearing)
					(First Figure or combination applies to center axle; second figure to third axle)	Make		Type	Size	Make and Type	Drum Material	Brake Diameter and Width	Lining Area				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
FABCO																	
220 (Ford)	11000	††	2000	8.25/20	52-48		48	Tim	T	4½	LH	CA	15x3½	192	2	53x2½	2½
220 (Chevrolet)	11000	††	2000	8.25/20	52-48		48	Tim	T	4½	LH	CA	15x3½	192	2	53x2½	2½
220 (All other makes)	11000	††	2000	8.25/20	52-48		48	Tim	T	4½	LH	CA	16x3½	205	2	53x2½	2½
330 (All other makes)	13000	††	3000	10.00/20	52-48		48	Tim	T	4½	LH	CA	16x3½	205	2	56x3	2½
325 (Ford F-7)	13000	††	3000	9.00/20	52-48		48	Tim	SF	4½	M	CA	16½x5	325	2	56x3	3
330 (Ford F-8)	13000	††	3000	10.00/20	52-48		48	Tim	SF	4½	M	CA	16½x5	325	2	56x3	3
400 (All other makes)	18000	††	3200	11.00/20	55-45		52	Tim	T	5	M	CA	16½x7	435	2	59x4	3½
GRICO SUPER-FLEX																	
T-1300	12000	††	2360	9.00	50-50		48	Shu	T	4½	H	CA	16x4 or 5	340	2	4, 18	
T-1400	14000	††	2640	10.00	50-50		48	Shu	T	4½	H	CA	16x5	410	2	4, 18	
T-1410	14000	††	2640	10.00	50-50		48	Shu	T	4½	A	CA	16½x6	434	2	4, 18	
T-1600	16000	††	2815	11.00	50-50		48	Shu	T	5	A-V	CA	16½x6	444	2	4, 18	
T-1610	16000	††	2815	11.00	50-50		48	Shu	T	5	A-V	CA	16½x7	512	2	4, 18	
LITTLE GIANT																	
A	11000		1920	8.25/20	53-47	4	42	Own(g)	Sq	2½	WagH	CA	15x4	253.5	2	42x2½	2½
B	13000		2450	9.00/20	50-50	44	44	Own(g)	Sq	3	WagH	CA	16x4	270.7	2	44x3	2½
C	15000		2850	10.00/20	50-50	44	44	Own(g)	Sq	3½	WagHA	CA	16x5	338	2	44x3½	3½
D	18000		3050	11.00/20	50-50	49	49	Own(g)	Sq	3½	WagHA	CA	16x6	406	2	49x3½	3½
LOAD BOOSTER (Pusher)																	
LB280 Chev. 1½ & 2 ton	14000		2100	9.00/20	50-50		48	Own	T	4½	VH	CA	15x4	251	4	48x2½	2½
LB28F Ford F5 & F6	14000		2100	9.00/20	50-50		48	Own	T	4½	VH	CA	15x3½	203	4	48x2½	2½
LB38F Ford F7 & F8	16000		2600	10.00/20	50-50		48	Own	T	5	VH or A	CA	16x5	345	4	48x2½	3¼
LB28D Dodge 1½ & 2 Ton	14000		2100	9.00/20	50-50		48	Own	T	4½	VH	CA	16x4	280	4	48x2½	2½
LB38D Dodge 2½ & 3 ton	16000		2600	10.00/20	50-50		48	Own	T	5	VH or A	CA	16x4 or 5	280	4	48x2½	3¼
LB28V Various 1½ & 2 ton	14000		2100	9.00/20	50-50		48	Own	T	4½	VH	CA	16x4	280	4	48x2½	2½
LB38V Various 2½ & 3 ton	16000		2600	10.00/20	50-50		48	Own	T	5	VH or A	CA	16x4 or 5	280	4	48x2½	3¼
LB-34 (Super-Load Booster)*	17000		2600	11.00/20	50-50		48	Own	T	5	VH or A	CA	16½x5½	345	4	48x3½	3¼
LB-40 (Super-Load Booster)*	20000		2800	11.00/20	50-50		48	Own	T	5	VH or A	CA	16½x5½	345	4	48x3½	3¼
NEWAY (Pusher)																	
R-334					50-50			Var	Var	Var	Var	Var	Var	Var			Var
REYCO																	
1100-3 (All Makes)	18000		2600	11.00/22	50-50	55-45	50	Var	Var	Var	Var	Var	Var	Var	6	44x3	
SIX WHEELS, INC. "MAXI" (*)																	
GF-1 (All Makes)	13000	(z)	1700	7.50/20	55-45		45	Var	T	4½	Var	Var	Var	Var	2	45x3½	Var
GF-2 (All Makes)	13000	(z)	1750	8.25/20	55-45		45	Var	T	4½	Var	Var	Var	Var	2	45x3½	Var
GF-3 (All Makes)	13000	(z)	1800	9.00/20	55-45		45	Var	T	4½	Var	Var	Var	Var	2	45x3½	Var
GFS-1 (All Makes)	15000	(z)	1850	9.00/20	55-45		45	Var	T	4½	Var	Var	Var	Var	2	45x3½	Var
GFS-2 (All Makes)	15000	(z)	1850	9.00/20	55-45		45	Var	T	4½	Var	Var	Var	Var	2	45x3½	Var
GFS-3 (All Makes)	15000	(z)	1850	10.00/20	55-45		45	Var	T	4½	Var	Var	Var	Var	2	45x3½	Var
GH-1 (All Makes)	16000	(z)	2000	10.00/20	55-45		45	Var	T	5	Var	Var	Var	Var	2	45x3½	Var
GH-2 (All Makes)	16000	(z)	2000	10.00/22	55-45	52-48	45	Var	T	5	Var	Var	Var	Var	2	45x3½	Var
GH-3 (All Makes)	16000	(z)	2000	11.00/20	55-45	52-48	45	Var	T	5	Var	Var	Var	Var	2	45x3½	Var
GHS-1 (All Makes)	18000	(z)	2250	10.00/22	52-48		48	Var	T	5	Var	Var	Var	Var	2	48x3½	Var
GHS-2 (All Makes)	18000	(z)	2250	11.00/20	52-48		48	Var	T	5	Var	Var	Var	Var	2	48x3½	Var
GHS-3 (All Makes)	18000	(z)	2250	11.00/22	52-48		48	Var	T	5	Var	Var	Var	Var	2	48x3½	Var
GHS-4 (All Makes)	18000	(z)	2250	11.00/24	52-48		48	Var	T	5	Var	Var	Var	Var	2	48x3½	Var
TRAILMOBILE																	
CTA-32 (All trucks 2 to 4½ ton)	11000	††	2073	11.00/22	58-42		48	Tim	T	4½	Tim	CA	16½x8	434	4	None	2½
CTA-42 (All heavy-duty trucks)	13000	††	2263	11.00/22	58-42		48	Tim	T	5	Tim	CA	16½x8	434	4	None	3¼
TRUCK EQUIPMENT CO. (E)																	
825-C Chev. 1½-2 ton	12000	††	2400	8.25/20	51-49	62-38	44	Own	Sq	2½	H	CA	15x3½	200	4	(a)	2½
825-F Ford 1½-2 ton	12000	††	2400	8.25/20	51-49	62-38	44	Own	Sq	2½	H	CA	15x3½	200	4	(a)	2½
825-X any 1½-2 ton	12000	††	2400	8.25/20	51-49	62-38	44	Own	Sq	2½	H	CA	15x3½	200	4	(a)	2½
825-CL Chev. 1½-2 ton	12000	††	2400	8.25/20	51-49	62-38	48½	Own	Sq	2½	H	CA	15x3½	200	4	(a)	2½
825-FL Ford 1½-2 ton	12000	††	2400	8.25/20	51-49	62-38	48½	Own	Sq	2½	H	CA	15x3½	200	4	(a)	2½
825-XL Ford 1½-2 ton	12000	††	2400	8.25/20	51-49	62-38	48½	Own	Sq	2½	H	CA	15x3½	200	4	(a)	2½
TRUKTOR (x)																	
HLL (Ford 1½-ton)	8800	1000	1750	7.50/20	53-47		45	Own	Sr	3	LHV	CA	15x3½	196	6	38½x2½	2½
HLL (Chevrolet 1½-ton)	8800	1000	1750	7.50/20	53-47		45	Own	Sr	3	LHV	CA	16x3	219	6	38½x2½	2½
HLL (Light trucks, tires to 8.25x20)	11000	1000	1895	8.25/20	53-47		45	Own	Sr	3	LHV	CA	16x2½	132	6	38½x2½	2½
HLS (Medium trucks, tires to 9.00x20)	14000	1420	2285	9.00/20	53-47		46	Own	Sr	3½	LHV	CA	16x3½	265	6	38½x3	2½
MLS (Ford F-7) tires to 9.00x20	14000	1420	2285	9.00/20	53-47		46	Own	Sr	3½	LHV	CA	16½x3½	218	6	38½x3	2½

Selection & Operation

THIRD AXLE MAKE AND MODEL and Truck Model Adapted to	Capacity (Lb.) See Explanatory Notes	Price (f. o. b. factory)	Weight (Lb.) with Max Tires, Frame Extension, Etc.	Maximum Tire Size	LOAD DISTRIBUTION RANGE		Axle Spacing (in inches) (with maximum tires)	AXLE DATA			BRAKES (Standard)				Number of Points of Frame Support	Spring Size or Number Leaves Added	Spindle Diameter (at inner bearing)
					(First Figure or combination applies to center axle; second figure to third axle)			Make	Type	Size	Make and Type	Drum Material	Brake Diameter and Width	Lining Area			
Trailing Axles—cont.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
TRUCKTOR (x)—cont.																	
HLR (Heavy truck, tires to 10.00x20)...	16000	1850	2710	10.00/20	53-47		48	Own	Sr	3 1/2	WAM	CA	16 1/2x6	251	6	40x3	2 1/4
HLR (Ford F-8, tires to 10.00x20)...	16000	1850	2710	10.00/20	53-47		48	Own	Sr	3 1/2	LHV	CA	16x5	335	6	40x3	2 1/4
HR (Heavy-duty, tires to 12.00x20)...	21000	2020	3177	11.00/24	53-47		52	Own	Sr	4	WAM	CA	16 1/2x6	251	6	41 1/2x3	3 3/8
HR-5 (Extra heavy-duty)...	30000	2200	3358	12.00/24	53-47		53 1/2	Own	Sr	5 1/2	WAM	CA	17 1/2x5 1/2	380	6	43 1/2x4	3 3/8
TRUXMORE (y)																	
280 Series	12000	1200	2400	8.25/20	51-49	62-38	44 1/2-48	Own	Sq	2 3/4	H	CA	15x3 1/2	200	4	36x2 1/2	2 1/4
340 (Standard)	14000	1400	2700	9.00/20	50-50	58-42	47-48	Own	Sq	3	H	CA	16x3 1/2	210	4	36x2 1/2	2 1/4
340HT (Hi-tork brake)	14000	1400	2750	9.00/20	50-50	58-42	47-48	Own	Sq	3	H	CA	16x5 1/2	340	4	36x2 1/2	2 1/4
340A (Air brake)	14000	1400	2800	9.00/20	50-50	58-42	47-48	Own	Sq	3	MW	CA	16 1/2x4 1/2	305	4	36x2 1/2	2 1/4
400 (Hi-tork Hyd. brake)	16000	1600	3100	10.00/20	51-49	60-40	48-49	Own	Sq	3 1/4	H	CA	16x5 1/2	340	4	36x2 1/2	2 1/4
400 (Oversize brake)	16000	1600	3150	10.00/20	51-49	60-40	48-49	Own	Sq	3 1/4	H	CA	16x5 1/2	410	4	36x2 1/2	2 1/4
400A (Air brake)	16000	1600	3200	10.00/20	51-49	60-40	48-49	Own	Sq	3 1/4	MW	CA	16 1/2x5 1/2	380	4	36x2 1/2	2 1/4
450 (Hi-tork Hyd. brake)	18000	1800	3400	11.00/20	51-49	60-40	48-50	Own	Sq	3 1/2-3 3/4	H	CA	16x5 1/2	410	4	36x2 1/2	2 1/4
450A (Air brake)	18000	1800	3450	11.00/20	51-49	60-40	48-50	Own	Sq	3 1/2-3 3/4	MW	CA	16 1/2x5 1/2	455	4	36x2 1/2	2 1/4
50H (Hyd. brake)	20000	2000	3800	11.00/24	50-50	65-35	49-53	Own	Sq	3 1/2	H	CA	17 1/2x5 1/2	360	4	36x2 1/2	2 1/4
50A (Air brake)	20000	2000	3850	11.00/24	50-50	65-35	49-53	Own	Sq	3 1/2	MW	CA	17 1/2x5 1/2	410	4	36x2 1/2	2 1/4
UTILITY																	
25 (For any 1 1/2-ton truck)	9000	900	1330	8.25/20	55-45		41	Cwn	Sq	2 1/2	BH†	CA	16x3 1/2	230	4	None	2 1/4
30 (For any 3 1/2-ton truck)	13000	1300	1880	10.00/20	55-45	68/33	44	Own	Sq	3	BH†	CA	17x4	270	4	None	2 1/4
35 (For any 5-ton truck)	18000	1800	2285	11.00/24	55-45	68/33	50	Own	Sq	3 1/2	OMV†	CA	16x5	300	4	None	2 1/4
Driving Axles																	
FABCO																	
520 Ford	10500	(z)	2400	8.25/20	50-50		48	Tim	D	4	FH	CA	15x3 1/2	192	2	53x2 1/2	2 1/4
520 (Chevrolet with H. D. Axles)	10500	(z)	2400	8.25/20	50-50		48	Chev	D	4	CH	CA	16x3	176	2	53x2 1/2	2 1/4
520 (All other makes)	10500	(z)	2400	8.25/20	50-50		48	Match	D	4	LH	CA	Match	(z)	2	53x2 1/2	2 1/4
530 (All other makes)	13000	(z)	3000	10.00/20	50-50		48	Match	D	4	LH	CA	Match	(z)	2	56x3	3
625 (Ford F-7)	14000	(z)	3200	10.00/20	50-50		48	Ford	D	4	FH	CA	15x5	444	2	56x3	3
630 (Ford F-8)	16000	(z)	3800	10.00/20	50-50		48	Ford	D	4	FH	CA	16x5	(z)	2	56x3	3
800 (H. D. Trucks)	20000	(z)	4000	11.00/20	50-50		50	Match	D	5	FH	CA	16x5	(z)	2	58x4	3 1/4
THORNTON DRIVE																	
A3C26 Chev. 1 1/2 ton	11250		3200	8.25/20	50-50		48	Chev 1S	D	3 1/2	VH	CA	15x4	251	4	48x2 1/2	2 1/4
A4C29 Chev. 2 ton	12500		3300	8.25/20	50-50		48	Chev 1S	D	4	VH	CA	15x4	251	4	48x2 1/2	2 1/4
A2C29 Chev. 2 ton	12750		3300	8.25/20	50-50		48	Chev 2S	D	4 1/2	VH	CA	15x3 1/2	203	4	48x2 1/2	2 1/4
A8D29 Dodge FA, KA, JA	12750		3300	8.25/20	50-50		48	Dodge2S	D	4 1/2	VH	CA	16x3	216	4	48x2 1/2	2 1/4
A6D34 Dodge KA, KMA	14250		3600	9.00/20	50-50		48 1/2	Dodge2S	D	4 1/2	VH	CA	16x3	216	4	48x2 1/2	2 1/4
A1F26 Ford F5	11250		3200	8.25/20	50-50		48	Ford 1S	D	3 1/2	VH	CA	15x3 1/2	203	4	48x2 1/2	2 1/4
A2F29 Ford F6	12750		3300	8.25/20	50-50		48	Ford 2S	D	4 1/2	VH	CA	15x3 1/2	203	4	48x2 1/2	2 1/4
A14F38 Ford F7, F8	16500		3800	10.00/20	50-50		48 1/2	Ford 2S	D	5 1/2	VH	CA	16x5	345	4	48x2 1/2	2 1/4
A15F38 Ford F7, F8	16500		3700	10.00/20	50-50		48 1/2	Ford 1S	D	5 1/2	VH	CA	16x5	345	4	48x2 1/2	2 1/4
A2 Various	12750		3800	8.25/20	50-50		48	Eaton 2S	D	5 1/2	VH	CA	15x3 1/2	203	4	48x2 1/2	2 1/4
A6 Various	14250		3700	9.00/20	50-50		48 1/2	Eaton 2S	D	4 1/2	VH	CA	15x4	251	4	48x2 1/2	2 1/4
A14 Various	16500		3800	10.00/20	50-50		48 1/2	Eaton 2S	D	5 1/2	VH or A	CA	16x5	345	4	48x2 1/2	2 1/4
A15 Various	16500		3700	10.00/20	50-50		48 1/2	Eaton 1S	D	5 1/2	VH or A	CA	16x5	345	4	48x2 1/2	2 1/4
TRUCKSTELL-BAUMIS																	
200 (Ford F-5)	22000	2200	2400	8.25/20	50-50		43 1/2	Ford	D	3 1/2	VFH	CA	15x3 1/2	203	2	63x2 1/2	2 1/4
200 (Chevrolet)	22000	2200	2400	8.25/20	50-50		43 1/2	Chev.	D	3 1/2	VCH	CA	15x4	251	2	63x2 1/2	2 1/4
300 (Ford F-6)	26000	2600	2800	8.25/20	50-50		48 1/2	Ford	D	4 1/2	VFH	CA	15x3 1/2	203	2	65x2 1/2	2 1/4
300 (Chevrolet)	26000	2600	2800	8.25/20	50-50		48 1/2	Chev.	D	4 1/2	VCH	CA	15x4	251	2	65x2 1/2	2 1/4
300 (Other)	26000	2600	2800	8.25/20	50-50		48 1/2	Match	D	4 1/2	VFH	CA	15x5	345	2	65x2 1/2	2 1/4
400 (Ford F-7)	28000	2800	3000	9.00/20	50-50		48 1/2	Ford	D	5 1/2	VFH or A	CA	16x5	345	2	60x3	3 1/4
400 (Ford F-8)	34000	3400	3600	10.00/20	50-50		48 1/2	Ford	D	5 1/2	VFH or A	CA	16x5@	Var	2	60x3	3 1/4
400 (Other)	34000	3400	3600	10.00/20	50-50		48 1/2	Match	D	5 1/2	VFH or A	CA	16x5	345	2	60x3	3 1/4
500 (Ford F-8)	34000	3400	3600	10.00/20	50-50		48 1/2	Ford	D	5 1/2	VFH or A	CA	16x5@	Var	2	60x3	3 1/4
500 (Other)	34000	3400	3600	10.00/20	50-50		48 1/2	Match	D	5 1/2	VFH or A	CA	16x5	345	2	60x3	3 1/4
Trailer Suspensions																	
HOEBLER																	
AT-48 (Note 1)	48000	4800	6100	11.00/22	50-50		108 1/2	Note 1	Note 1	Var	Var	Var	Var	Var	2	42x4	Var
NEWAY (Tandem)																	
334	34000	3400	1175*	11.00/20	50-50		48	Var	Var	Var	Var	Var	Var	Var	2	Var	Var
336	36000	3600	1235*	11.00/20	50-50		48	Var	Var	Var	Var	Var	Var	Var	2	Var	Var
402	44000	4400		11.00/20	50-50		48	Var	Var	Var	Var	Var	Var	Var	2	Var	Var
836	36000	3600	1267*	11.00/22	50-50		50 1/2	Var	Var	Var	Var	Var	Var	Var	2	Var	Var
842	42000	4200	1340*	11.00/22	50-50		50 1/2	Var	Var	Var	Var	Var	Var	Var	2	Var	Var
846	46000	4600		12.00/20	50-50		50 1/2	Var	Var	Var	Var	Var	Var	Var	2	Var	Var
REYCO																	
1100-3 (All Makes)	36000	3600	2600	12.00/22	50-50			Var	Var	Var	Var	Var	Var	Var	6	44x3	
1250, 1300 (All Makes)	18000	1800	2100	12.00/22				Var	Var	Var	Var	Var	Var	Var	4	44x3	
1325 (All Makes)	25000	2500	2200	12.00/24				Var	Var	Var	Var	Var	Var	Var	4	47x3	
TRUCKTOR																	
T-11 (Single)	11000	1100	2000	8.25/20				Own	Sr	3	LHV	CA	16x3 1/2	236	4	56	
T-14 (Single)	14000	1400	2300	9.00/20				Own	Sr	3 1/4	LHV	CA	17 1/4x4	281	4	56	
T-16 (Single)	16000	1600	2600	10.00/20				Tim	T	5	MA	CA	16 1/2x6	438	4	56	
T-18 (Single)	16000	1600	2750	11.00/22				Tim	T	5	MA	CA	16 1/2x7	512	4	56	
T-20 (Single)	20000	2000	2900	11.00/22				Tim	T	5 1/2	MA	CA	16x7	480	4	56	
T-25 (Single)	25000	2500	3750	12.00/24				Own-Tim	Opt	6	MA	CA	16x7	480	4	56	
TT-14 (Tandem)	28000	2800	4600	9.00/20	50-50		48	Own	Sr	3	MA	CA	17 1/4x4	281	6	45 1/2	
TT-16 (Tandem)	32000	3200	5000	10.00/20	50-50		50	Tim	T	5	MA	CA	16 1/2x6	438	6	48 1/2	
TT-18 (Tandem)	36000	3600	5200	11.00/20	50-50		50	Tim	T	5	MA	CA	16 1/2x7	5			

1952 BUS SPECIFICATIONS—

City

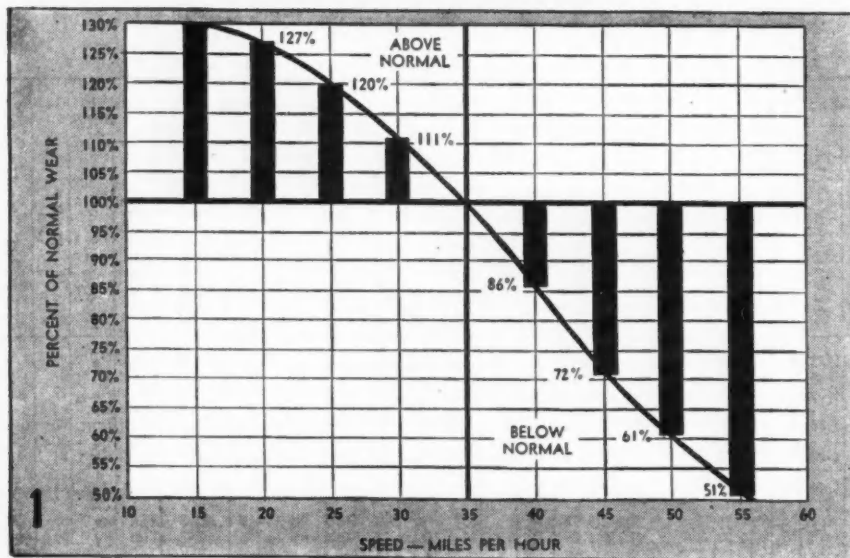
Line Number	BUS MAKE AND MODEL	GENERAL								ENGINE												Oiling System		
		Passenger Rating	Type (City Service, Parlor, etc.)	Standard Wheelbase (In.)	Overall Length (In.)—Bumper to Bumper	Inside Length (In.)—Passenger Compartment	Tread (In.)—Front and Rear	Complete Vehicle Weight—Dry (Lb.)	Standard Tire Size (In.)—Front and Rear	Make and Model	Cycle and Fuel	Location	Number of Cylinders—Bore and Stroke (In.)	Displacement (Cu. In.)	Rated Horsepower (A.M.A.)	Maximum Brake Hp. at Governed R.P.M.	Maximum Net Torque (Lb. Ft.) at Specified R.P.M.	Compression Ratio—to 1	Compression Pressure—(Lb.) at Specified R.P.M.	Valve Arrangement	Pressure to—			
1	ACF-Brill	1C-41A	37-41	IC	270	419½	367	80½-71¼	20000	11.00/22	HS	190-5	4-G	UF	6-5½x6	779	66.2	220-2200	625-1300	5.60		I	acdfgh	
2		C-27	27	CS	163	311	279	82½-74	10600	8.25/20	Int.	RD-372	4-G	TR	6-4½x4½	372	45.9	140-2850	282-1400	6.30		I	acdfgh	
3		C-31	31	CS	196	344	312	81½-74	11300	9.00/20	Int.	RD-406	4-G	TR	6-4½x4½	406	45.9	149-2750	319-1200	6.30		I	acdfgh	
4		C-44	44	CS	249	420	391	80½-71	17800	11.00/22	HS	180-1	4-G	UF	6-5x6	707	60.0	208-2200	540-1400	6.00		I	acdfgh	
5		C-44	45	Sub	249	420	391	80½-71	18900	11.00/22	HS	190-2	4-G	UF	6-5½x6	779	66.2	220-2200	625-1300	5.60		I	acdfgh	
6		C-48	48	CS	247	474	444½	88½-74½	19200	12.00/20	HS	190-2	4-G	UF	6-5½x6	779	66.2	220-2200	625-1300	5.60		I	acdfgh	
7		SU-37	37	Sub	198	359	325	81½-74	12900	9.00/20	Int.	RD-450	4-G	TR	6-4½x5	451	45.9	158-2600	359-1200	6.20		I	acdh	
8	Aerocoach		373	37	IC	229	407½	369	80½-72½	16500	10.00/20	Cont.	U6501	4-G	TR	6-4½x5½	501	48.6	170-2400	380-1200	6.14		I	abcd
9	Beaver	21PT	29	CS	150½	312	153	79-65½	11800	8.25/20	Dodge Ind.	8-4	G	TR	6-3½x4½	251	28.5				122-180	I	abcd	
10		B-35PT	37	CS	195½	372	192	81-71	13500	9.00/20	Int.	RD450A	4-G	TR	6-4½x5	451	56.0	152-2600	358-1200	6.30		I	abcd	
11	Beck	Luxury Liner	37	IC	220	420	356	80½-71½		11.00/20	Cum HRB600	4-D	R		6-5½x6	743	63.1	165-1800	540-1000	15.5		I	abcd	
12		Mainliner	37	P	220	412	350	80½-71½		10.00/20	Int.	RD450A	4-G	R		6-4½x5	450	45.9	148-2600	354-1000	6.20		I	abcd
13		29-33	29-33	P	217½	402	288	80½-71½		10.00/20	Cum JBS600	4-D	R		6-4½x5	401	40.6	150-2500	360-1500	15.5		I	abcd	
14	Fitzjohn	FTG Cityliner	29-31	CS	155½	323½	277	81½-74	12000	8.25/20	Her	JXLD	4-G	TR	6-4x4½	339	38.4	131-3000	272-1400	6.20		L	abcdg	
15		FTG Cityliner	29-31	CS	155½	323½	277	81½-74	12400	8.25/20	Her	WXL	4-G	TR	6-4x4½	404	43.3	140-2600	316-1400	6.50		L	abcdg	
16		FTG Cityliner	33-35	CS	182½	351	304½	81½-74	12750	9.00/20	Her	JXLD	4-G	TR	6-4x4½	339	38.4	131-3000	272-1400	6.20		L	abcdg	
17		FTG Cityliner	33-35	CS	182½	351	304½	81½-74	13150	9.00/20	Her	WXL	4-G	TR	6-4x4½	404	43.3	140-2600	316-1400	6.50		L	abcdg	
18		FTD Cityliner	33-35	CS	182½	351	304½	81½-74	13800	9.00/20	Her	DWXL	4-D	TR	6-4x4½	426	43.3	142-2600	330-1500	15.5		VI	abcd	
19		FTG Cityliner	37-39	CS	210½	378½	332½	81½-74	13900	10.00/20	Her	WXL	4-G	TR	6-4x4½	404	43.3	140-2600	316-1400	6.50		L	abcdg	
20		FTD Cityliner	37-39	CS	210½	378½	332½	81½-74	14550	10.00/20	Her	DWXL	4-G	TR	6-4x4½	426	43.3	142-2600	330-1500	15.5		VI	abcd	
21	FSG Suburbanliner		29	Sub	155½	325½	277	81½-74	12500	8.25/20	Her	JXLD	4-G	TR	6-4x4½	339	38.4	131-3000	272-1400	6.20		L	abcdg	
22	FSG Suburbanliner		29	Sub	155½	325½	277	81½-74	12900	8.25/20	Her	WXL	4-G	TR	6-4x4½	404	43.3	140-2600	316-1400	6.50		L	abcdg	
23	FSG Suburbanliner		33	Sub	182½	351	304½	81½-74	13250	9.00/20	Her	JXLD	4-G	TR	6-4x4½	339	38.4	131-3000	272-1400	6.20		L	abcdg	
24	FSG Suburbanliner		33	Sub	182½	351	304½	81½-74	13650	9.00/20	Her	WXL	4-G	TR	6-4x4½	404	43.3	140-2600	316-1400	6.50		L	abcdg	
25	FSD Suburbanliner		33	Sub	182½	351	304½	81½-74	14300	9.00/20	Her	DWXL	4-D	TR	6-4x4½	426	43.3	142-2600	330-1500	15.5		VI	abcd	
26	FSG Suburbanliner		37	Sub	210½	378½	332½	81½-74	14400	10.00/20	Her	WXL	4-G	TR	6-4x4½	404	43.3	140-2600	316-1400	6.50		L	abcdg	
27	FSD Suburbanliner		37	Sub	210½	378½	332½	81½-74	15050	10.00/20	Her	DWXL	4-D	TR	6-4x4½	426	43.3	142-2600	330-1500	15.5		VI	abcd	
28	510 Duraliner	28-32	IC	185½	321½	286	77½-65½	13500	9.00/20	Her	JXLD	4-G	Fr		6-4x4½	339	38.4	131-3000	272-1400	6.20		L	abcdg	
29	635 Superduraliner	36-40	IC	254½	401½	365	80-71½	17800	11.00/20	Wau	140GKB	4-G	Fr		6-4½x5½	525	55.0	176-2600	435-800	6.40		I	acdfgh	
30	Fixible	218B1-51	29	IC	218	410½	300	80½-69½	15175	9.00/20	Bul	FB320	4-G	R	8-3½x4½	320	37.8	144-3400	278-2200	6.30		I	acdf	
31		218B6-51	29	IC	218	410½	300	80½-69½	15100	9.00/20	Bul	FB320	4-G	R	8-3½x4½	320	37.8	144-3400	278-2200	6.30		I	acdf	
32		218B7-51	37	IC	218	410½	338	80½-69½	15100	9.00/20	Bul	FB320	4-G	R	8-3½x4½	320	37.8	144-3400	278-2200	6.30		I	acdf	
33		182B1-51	25	IC	182	374½	264	80½-69½	14600	9.00/20	Bul	FB320	4-G	R	8-3½x4½	320	37.8	144-3400	278-2200	6.30		I	acdf	
34		218DWX1-51	29	IC	218	410½	264	80½-69½	16250	9.00/20	Her	DWXL	4-D	R	6-4x4½	426	43.3	142-2600	330-1700	15.0		I	abcd	
35		218DWX7-51	37	IC	218	410½	338	80½-69½	16250	9.00/20	Her	DWXL	4-D	R	6-4x4½	426	43.3	142-2600	330-1700	15.0		I	abcd	
36		218F1-52	29	IC	218	410½	301	80½-69½	15610	9.00/20	Fag	FTC190	4-G	R	6-4x4½	404	43.3	162-2800	362-1600	7.50		I	abc	
37	G.M.C.	PD4103	41	IC	247	420	387	79½-70½	18600	11.00/20	Own	6-71	2-D	TR	6-4x4½	426	43.3	200-2000	600-1200	16.0	500-1000	I	abcdgh	
38		TGH2708	27	CS	151½	296½	258	81½-75½	9010	8.25/20	Own	270	4-G	TR	6-3½x4	270	34.3	107-3200	212-1000	6.75	165-1000	I	abcdgh	
39		TGH3101	31	CS	180½	325½	287	81½-75½	9355	8.25/20	Own	270	4-G	TR	6-3½x4	270	34.3	107-3200	212-1000	6.75	165-1000	I	abcdgh	
40		TDM3612	36	CS	210½	369½	337	80½-72½	14905	9.00/20	Own	4-71	2-D	TR	6-4x4½	284	28.9	133-2000	400-1200	16.0	500-1000	I	abcdgh	
41		TDM4509	45	CS	238½	420	390	79½-70½	16720	10.00/20	Own	6-71	2-D	TR	6-4x4½	426	43.3	170-2000	545-1000	16.0	500-1000	I	abcdgh	
42		TDM3612	36	CS	210½	369½	337	80½-72½	14770	9.00/20	Own	4-71	2-D	TR	6-4x4½	284	28.9	133-2000	400-1200	16.0	500-1000	I	abcdgh	
43		TDM4509	45	CS	238½	420	390	79½-70½	16550	10.00/20	Own	6-71	2-D	TR	6-4x4½	426	43.3	170-2000	545-1000	16.0	500-1000	I	abcdgh	
44		TDM4511	45	CS	238½	420	390	85½-76½	17220	11.00/20	Own	6-71	2-D	TR	6-4x4½	426	43.3	170-2000	545-1000	16.0	500-1000	I	abcdgh	
45		TDH5103	51	CS	281½	477	441	87½-76½	18440	11.00/20	Own	6-71	2-D	TR	6-4x4½	426	43.3	200-2000	600-1200	16.0	500-1000	I	abcdgh	
46		TDH5104	51	CS	281½	477	441	87½-76½	17690	11.00/20	Own	6-71	2-D	TR	6-4x4½	426	43.3	200-2000	600-1200	16.0	500-1000	I	abcdgh	
47	Kalamazoo		29	IC	194	316		70-66		8.25/20	Int	K-7	4-G	Fr	6-3½x4½	269	30.4	101-3000	222-1600	6.30		I	abcd	
48			21-27	CIC	160	281		70-66		7.50/20	Int	K-7	4-G	Fr	6-3½x4½	269	30.4	101-3000	222-1600	6.30		I	abcd	
49	Mack	C33	33	CS	180	344	313	79½-71½	15830	10.00/20	Own	EN510A	4-G	TR	6-4x4½	510	47.2	158-2400	366-1000	6.07	135-1000	I	acdeh	
50		C37	37	CS	213½	<																		

City and Intercity Types

Selection & Operation

FUEL SYSTEM		ELECTRICAL SYSTEM		Governor	TRANSMISSION				Uni- versals	REAR AXLE		BRAKES		SPRINGS		RUNNING GEAR		Line Number										
Make and Type	Size (In.)	Tank Capacity (Gal.)	Ignition System—Make		Make	No. of Forward Speeds	Low Speed Ratio—to 1	Type		Make and Model	Standard Gear Ratio—to 1	Type of Applicator	Service	Hand	Front	Rear	Front Axle—Make	Steering Gear—Make										
Carburetor or Injector Pump			Generator and Starter—Make	Battery	Clutch—Make and Size (In. diam.)			Number	Size of Series			Total Lining Area (Sq. In.)	Drum Diam. (In.)	Operates on—	No. of Leaves	Length and Width (In.)	No. of Leaves	Length and Width (In.)	Outside Diameter of Min. Turn Circle (Ft.)									
Zen. Up 2 1/4	150	DR	DR	12-160	Ce	68	Lg. 17	Spi	4	4.36	M	2	1700	Tim. R-112-W	4.11	A	699	16 1/2	Da	127	12	64-4	13	70-5	Tim	Re	84	1
Hol. Do 1 1/4	65	DR	LD	12-160	Va	51	Lg. 14	Cla	3	4.06	M	2	1500	Tim. 56434W	5.71	A	533	14 1/2	Da	85	11	60-3	12	64-3	Cla	Re	64	2
Hol. Do 1 1/4	65	DR	LD	12-160	Va	54	Lg. 14	Cla	3	4.06	M	2	1500	Tim. 56434W	5.71	A	533	14 1/2	Da	85	12	60-3	12	64-3	Cla	Re	72	3
Zen. Up 2 1/4	107	DR	LD	12-160	Ce	51	Lg. 17	Spi	4	4.36	M	2	1700	Tim. 59070W	5.14	A	830	16 1/2	Da	127	12	66-4	12	78-4	Tim	Re	85	4
Zen. Up 2 1/4	107	DR	LD	12-160	Ce	68	Lg. 17	Spi	4	4.36	M	2	1700	Tim. 59070W	4.11	A	848	16 1/2	Da	127	12	66-4	12	78-4	Tim	Re	85	5
Hol. Do 1 1/4	120	DR	DR	12-160	Ce	52	Lg. 14	Cla	3	4.06	M	2	1700	Tim. R-110-DPA	5.57	A	836	15	Da	127	12	62-4	14	68-5	Tim	Re	80	6
Hol. Do 1 1/4	75	DR	LD	12-160	Su	54	Lg. 14	Cla	3	4.06	M	2	1600	Tim. 56434W	5.29	A	533	14 1/2	Da	85	12	60-3	12	64-3	Cla	Re	74	7
Zen. Do 1 1/4	100	DR	DR	12-165	Su	65	Lg. 15	Cla	4	4.44	M	2	1600	Tim. 58434	4.11	A	760	16 1/2	Da	115	10	51-4	11	64 1/2-4	Tim	Re	64	8
Car. Up	65	AL	AL	12-158	Su	58	TD 12	Dgo	4		M	2	1400	Tim. 54440	5.71	M	14 1/2	Da	14	60-3	16	60-3	Tim	Re	55	9		
Hol. Do	90	DR	LD	12-155	Ce	55	Roc. 14	Spi	3	3.80	M	2	1500	Tim. L110	5.20	A	614	15	Da	45	10	60-3	16	60-3	Tim	Re	65	10
Cum.	90	LN	LN	12-110	68	LR	17	Fu	5	6.37	M	2	1600	Tim. Q-110-DPA	4.62	A	15	Da				54-4		70-4	Tim	Re	80	11
Hol. Do	92	DR	LD	12-155	Su	80	Lg. 14	Fu	4	4.61	M	2	1500	Tim. L110	5.20	A	16 1/2	Da				52-3	17	64-4	Tim	Re	80	12
Cum.	92	LD	LD	12-155	M	58	Lg. 14	Fu	4	4.61	M	2	1500	Tim. L110	5.20	A	16 1/2	Da				52-3	17	58-3	Tim	Re	78	13
Zen. Do 1 1/4	60	DR	DR	12-150	Ce	53	BB 13	Cla	3	4.06	M	2	1600	Tim. 56434W	6.16	A	586	14 1/2	Da	85	14	54-3	14	60-3	Tim	Re	57	14
Zen. Do 1 1/4	60	DR	LD	12-150	Ce	53	Lg. 14	Cla	3	4.06	M	2	1600	Tim. 56434W	6.16	A	586	14 1/2	Da	85	14	54-3	14	60-3	Tim	Re	57	15
Zen. Do 1 1/4	60	DR	LD	12-150	Ce	53	BB 13	Cla	3	4.06	M	2	1600	Tim. 56434W	6.16	A	586	14 1/2	Da	85	14	54-3	14	60-3	Tim	Re	57	16
Zen. Do 1 1/4	60	DR	LD	12-150	Ce	53	Lg. 14	Cla	3	4.06	M	2	1600	Tim. 56434W	6.16	A	586	14 1/2	Da	85	14	54-3	14	60-3	Tim	Re	57	17
Zen. Do 1 1/4	60	DR	LD	12-150	Ce	53	BB 13	Cla	3	4.06	M	2	1600	Tim. 56434W	6.16	A	586	14 1/2	Da	85	14	54-3	14	60-3	Tim	Re	57	18
Zen. Do 1 1/4	60	DR	LD	12-150	Ce	53	Lg. 14	Cla	3	4.06	M	2	1600	Tim. 56434W	6.16	A	586	14 1/2	Da	85	14	54-3	14	60-3	Tim	Re	57	19
Zen. Do 1 1/4	60	DR	LD	12-150	Ce	53	BB 13	Cla	3	4.06	M	2	1600	Tim. 56434W	6.16	A	586	14 1/2	Da	85	14	54-3	14	60-3	Tim	Re	57	20
Zen. Do 1 1/4	60	DR	LD	12-150	Ce	53	Lg. 14	Cla	3	4.06	M	2	1600	Tim. 56434W	6.16	A	586	14 1/2	Da	85	14	54-3	14	60-3	Tim	Re	57	21
Zen. Do 1 1/4	60	DR	LD	12-150	Ce	53	BB 13	Cla	3	4.06	M	2	1600	Tim. 56434W	6.16	A	586	14 1/2	Da	85	14	54-3	14	60-3	Tim	Re	57	22
Zen. Do 1 1/4	60	DR	LD	12-150	Ce	53	Lg. 14	Cla	3	4.06	M	2	1600	Tim. 56434W	6.16	A	586	14 1/2	Da	85	14	54-3	14	60-3	Tim	Re	57	23
Zen. Do 1 1/4	60	DR	LD	12-150	Ce	53	BB 13	Cla	3	4.06	M	2	1600	Tim. 56434W	6.16	A	586	14 1/2	Da	85	14	54-3	14	60-3	Tim	Re	57	24
Zen. Do 1 1/4	60	DR	LD	12-150	Ce	53	Lg. 14	Cla	3	4.06	M	2	1600	Tim. 56434W	6.16	A	586	14 1/2	Da	85	14	54-3	14	60-3	Tim	Re	57	25
Zen. Do 1 1/4	60	DR	LD	12-150	Ce	53	BB 13	Cla	3	4.06	M	2	1600	Tim. 56434W	6.16	A	586	14 1/2	Da	85	14	54-3	14	60-3	Tim	Re	57	26
Zen. Do 1 1/4	60	DR	LD	12-150	Ce	53	Lg. 14	Cla	3	4.06	M	2	1600	Tim. 56434W	6.16	A	586	14 1/2	Da	85	14	54-3	14	60-3	Tim	Re	57	27
Zen. Do 1 1/4	60	DR	LD	12-150	Ce	53	BB 13	Cla	3	4.06	M	2	1600	Tim. 56434W	6.16	A	586	14 1/2	Da	85	14	54-3	14	60-3	Tim	Re	57	28
Zen. Do 1 1/4	60	DR	LD	12-150	Ce	53	Lg. 14	Cla	3	4.06	M	2	1600	Tim. 56434W	6.16	A	586	14 1/2	Da	85	14	54-3	14	60-3	Tim	Re	57	29
Zen. Do 1 1/4	60	DR	LD	12-150	Ce	53	BB 13	Cla	3	4.06	M	2	1600	Tim. 56434W	6.16	A	586	14 1/2	Da	85	14	54-3	14	60-3	Tim	Re	57	30
Zen. Do 1 1/4	60	DR	LD	12-150	Ce	53	Lg. 14	Cla	3	4.06	M	2	1600	Tim. 56434W	6.16	A	586	14 1/2	Da	85	14	54-3	14	60-3	Tim	Re	57	31
Zen. Do 1 1/4	60	DR	LD	12-150	Ce	53	BB 13	Cla	3	4.06	M	2	1600	Tim. 56434W	6.16	A	586	14 1/2	Da	85	14	54-3	14	60-3	Tim	Re	57	32
Zen. Do 1 1/4	60	DR	LD	12-150	Ce	53	Lg. 14	Cla	3	4.06	M	2	1600	Tim. 56434W	6.16	A	586	14 1/2	Da	85	14	54-3	14	60-3	Tim	Re	57	33
Zen. Do 1 1/4	60	DR	LD	12-150	Ce	53	BB 13	Cla	3	4.06	M	2	1600	Tim. 56434W	6.16	A	586	14 1/2	Da	85	14	54-3	14	60-3	Tim	Re	57	34
Zen. Do 1 1/4	60	DR	LD	12-150	Ce	53	Lg. 14	Cla	3	4.06	M	2	1600	Tim. 56434W	6.16	A	586	14 1/2	Da	85	14	54-3	14	60-3	Tim	Re	57	35
Zen. Do 1 1/4	60	DR	LD	12-150	Ce	53	BB 13	Cla	3	4.06	M	2	1600	Tim. 56434W	6.16	A	586	14 1/2	Da	85	14	54-3	14	60-3	Tim	Re	57	36
Zen. Do 1 1/4	60	DR	LD	12-150	Ce	53	Lg. 14	Cla	3	4.06	M	2	1600	Tim. 56434W	6.16	A	586	14 1/2	Da	85	14	54-3	14	60-3	Tim	Re	57	37
Zen. Do 1 1/4	60	DR	LD	12-150	Ce	53	BB 13	Cla	3	4.06	M	2	1600	Tim. 56434W	6.16	A	586	14 1/2	Da	85	14	54-3	14	60-3	Tim	Re	57	38
Zen. Do 1 1/4	60	DR	LD	12-150	Ce	53	Lg. 14	Cla	3	4.06	M	2	1600	Tim. 56434W	6.16	A	586	14 1/2	Da	85	14	54-3	14	60-3	Tim	Re	57	39
Zen. Do 1 1/4	60	DR	LD	12-150	Ce	53	BB 13	Cla	3	4.06	M	2	1600	Tim. 56434W	6.16	A	586	14 1/2	Da	85	14	54-3	14	60-3	Tim	Re	57	40
Zen. Do 1 1/4	60	DR	LD	12-150	Ce	53	Lg. 14	Cla	3	4.06	M	2	1600	Tim. 56434W	6.16	A	586	14 1/2	Da	85	14	54-3	14	60-3	Tim	Re	57	41
Zen. Do 1 1/4	60	DR	LD	12-150	Ce	53	BB 13	Cla	3	4.06	M	2	1600	Tim. 56434W	6.16	A	586	14 1/2	Da	85	14	54-3	14	60-3	Tim	Re	57	42
Zen. Do 1 1/4	60	DR	LD	12-150	Ce	53	Lg. 14	Cla	3	4.06	M	2	1600	Tim. 56434W	6.16	A	586	14 1/2	Da	85	14	54-3	14	60-3	Tim	Re	57	43
Zen. Do 1 1/4	60	DR	LD	12-150	Ce	53	BB 13	Cla	3	4.06	M	2	1600	Tim. 56434W	6.16	A	586	14 1/2	Da	85	14	54-3	14	60-3	Tim	Re	57	44
Zen. Do 1 1/4	60	DR	LD	12-150	Ce	53	Lg. 14	Cla	3	4.06	M	2	1600	Tim. 56434W	6.16	A	586	14 1/2	Da	85	14	54-3	14	60-3	Tim	Re	57	45
Zen. Do 1 1/4	60	DR	LD	12-150	Ce	53	BB 13	Cla	3	4.06	M	2	1600	Tim. 56434W	6.16	A	586	14 1/2	Da	85	14	54-3	14	60-3	Tim	Re	57	46
Hol. Do 1 1/4	31	AL	AL	6-205	58	Int. 10 1/2	Int	5	6.32	M	3		Int	R1560	5.62	H	421	Da	75	9	46-2 1/4	11	54-3	Int	Re	59	47	
Hol. Do 1 1/4	31	AL	AL	6-205	57	Int. 10 1/2	Int	5	6.32	M	3		Int	R1560	5.62	H	421	Da	75	9	46-2 1/4	11	54-3	Int	Re	59	48	
Zen. Up 1 1/4	75	DR	DR	12-158	Ce	24	Spi 14	Spi	4		H	2	1600	Own. RAS1061	Var	A	740	15	Da	61	11	62-3 1/2	15	62-4	Own	Gem	55	49
Zen. Up 1 1/4	75	DR	DR	12-158	Ce	24	Spi 14	Spi	4		H	2	1600	Own. RAS1061	Var	A	740	15	Da	61	11	62-3 1/2	15	62-4	Own	Gem	64	50
Boa. B 85	85	DR	DR	12-200	H	20	Spi 16	Spi	4		H	2	1700	Own. RAS1031	Var	A	884	16 1/2	Da	139	11	70-4	15	62-4	Own	Gem	75	51
Boa. B 8																												

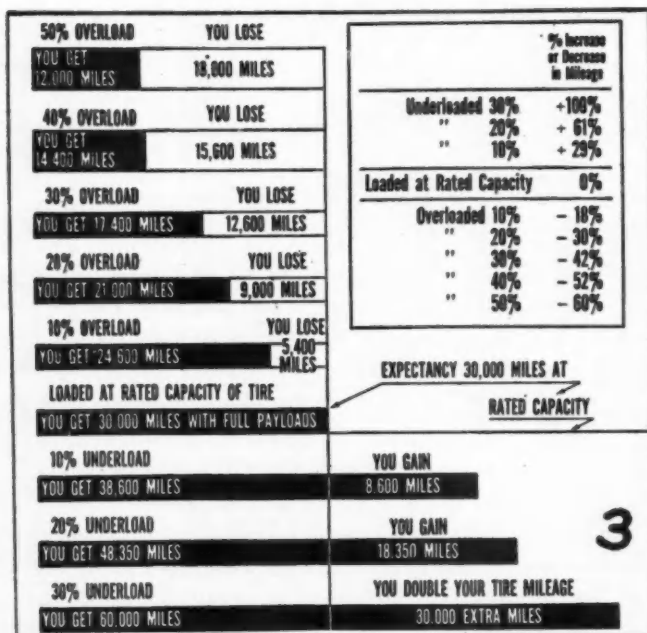
Effect of Speed



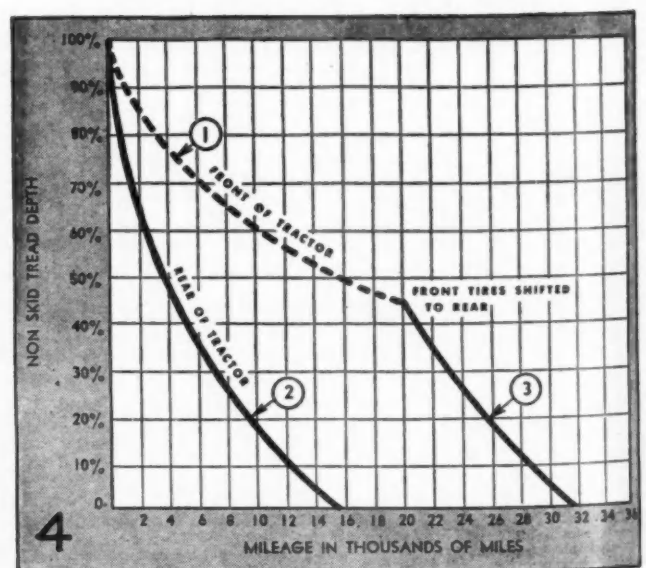
Factors Affecting Tire Mileages

Eight factors contributing to tire failures are outlined graphically here, to show

Effect of Load



Effect of Tire Rotation



Abbreviated Guide to Tire Troubles

Fast tread wear . . . caused by

1. Misaligned wheels
2. Underinflation
3. Uneven braking
4. Overloading
5. Start-stop service

Tread cracking . . . caused by

1. Overloading
2. Underinflation
3. Rock bruises

Tread separation . . . caused by

1. Overinflation
2. High speeds
3. Overheating

Impact breaks . . . caused by

1. Overinflation
2. Overloading
3. Rough roads and high speeds
4. Curb bumping

Bead failures . . . caused by

1. Overloading
2. Overinflation
3. Bent rims or rings
4. Rusty rims

Eight common causes and results of tire abuse are illustrated graphically here to show operators what they can expect to pay in tire costs for improper attention to such factors as speed, loads, inflation, road surface, etc.

Effect of Road Surface

While simplified somewhat, the following wear factors can be used as guides to better mileages and lower tire costs.

Fig. 1. Speed. High speed increases tire temperatures and causes faster tread wear. Rapid flexing resulting from high speed builds up temperatures to the point where the rubber becomes soft and the tensile strength of the cords is reduced, lowering the tire's resistance to road shock. Tires running at 50 mph can be expected to give only about 61% of results obtained at 35 mph—a loss of 39%. Conversely, tires running at 25 mph can be expected to give 20% better mileage than those running at 35 mph.

Fig. 2. Road Condition. The type of road surface and the topography can affect tire mileage as much as 50%, as shown on these two charts, figures for which are based upon actual operation.

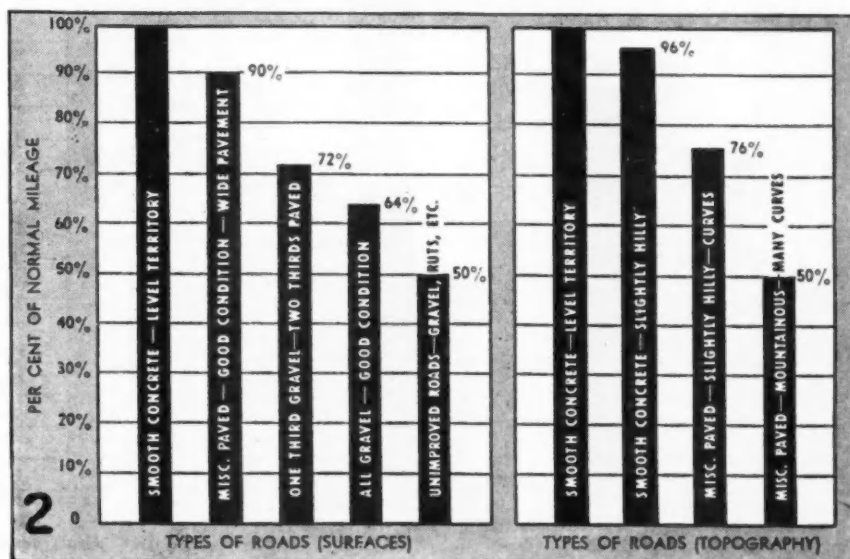


Fig. 3. Load. Tire mileage decreases rapidly as tires are loaded beyond their capacities. Overload increases flexing, which in turn builds up excessive heat, resulting in a higher rate of tread wear. As shown in the chart, 20% overload will result in only 70% of normal mileages—a loss of 30%.

Fig. 4. Rotation. Rate of tread wear is slower on initial application of front tires than on rear tires as indicated by slope of line 1 as compared to that of

line 2. In this case tires were run 20,000 miles on front position; then changed to rear. New tires on rear wore smooth at 15,500, while non-skid tread design of new front tires was only 50% worn off. A systematic method of rotation can increase mileage up to 50%.

Fig. 5. Inflation. Chart shows how expected mileage is reduced as underinflation continues. Underinflation results in fast, irregular tread wear due to increased squirming and scuffing over the contact area. Overinflation

promotes danger of bruising and cutting.

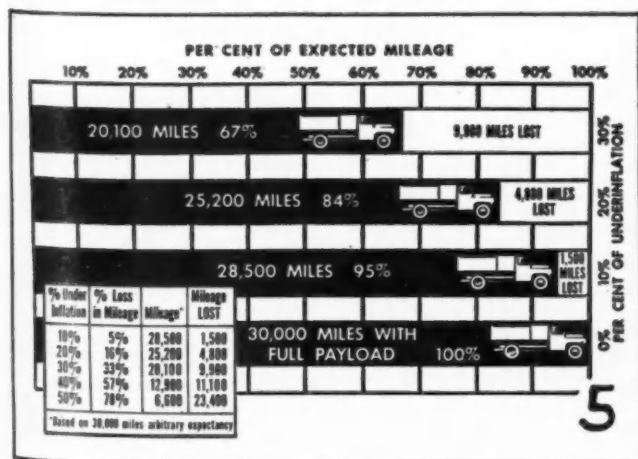
Fig. 6. Temperature. Tread mileage is inversely proportional to temperatures. As air temperature increases, the rate of tread wear also increases, and consequently road mileage decreases. Chart graphically shows that an increase from 75 to 85 deg will result in a reduction of tread mileage of about 13%. A decrease in air temperature from 75 to 65 deg will add about 9% to tread life.

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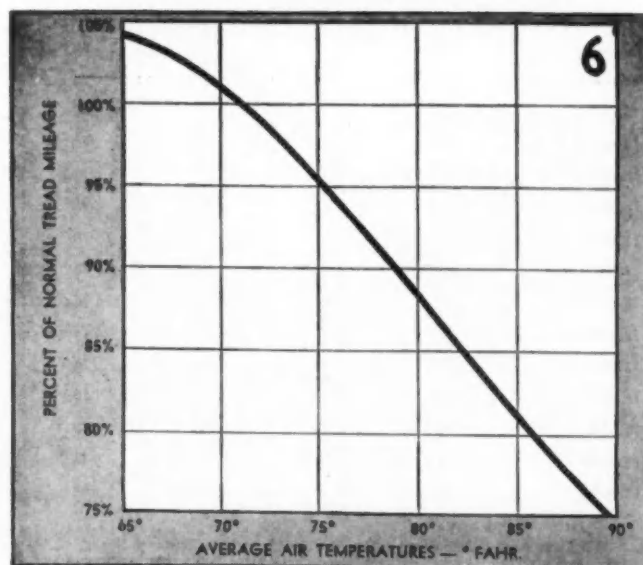
what you can expect to realize by controlling heat, speed, loads, inflation, etc.

Charts and data supplied courtesy Goodyear Tire & Rubber Co.

Effect of Inflation



Effect of Temperature



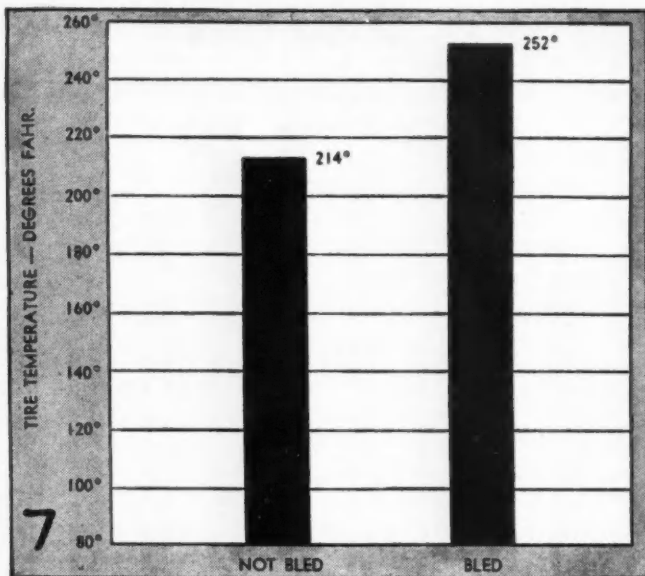
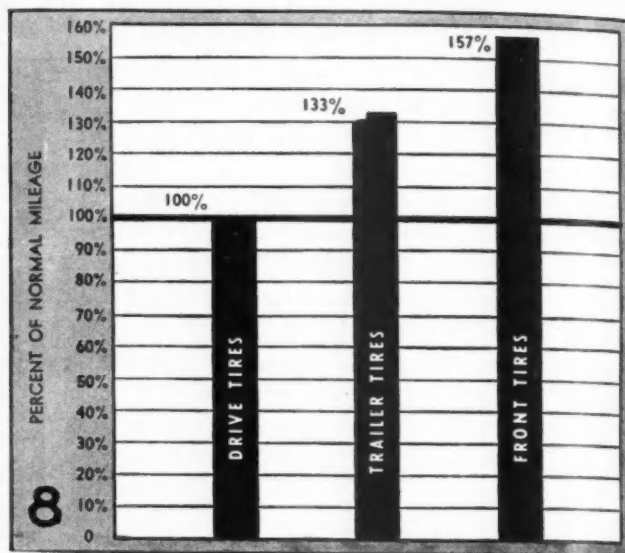


Fig. 7. Bleeding. Bleeding tires increases the amount of flexing, and greater flexing causes higher temperatures. When tires are bled on the road, for example, inflation drops appreciably below recommended pressure upon cooling. Those who bleed tires

enroute fail to recognize that temperature increase is rapid under normal loads and speeds up to a point. After normal operating temperature is reached, the increase levels off.

Fig. 8. Wheel Position. Figures taken from actual performance data show



that 33% more mileage can be expected from tires run 100% on trailer wheels than from tires used on drive wheels. Similarly, 57% higher mileages can be expected from front tires than from those used on driving wheels.

Truck Tire Data . . . Showing ply ratings, dual spacing, maximum pressures, maximum load, revolutions per mile, advanced and interim rim recommendations

Tire Size	Ply Rating	Advanced Rim Recommended Permissible	Interim Rim Recommended Permissible	Maximum Pressure (lb)	Maximum Load (lb)	Minimum Dual Spacing		Tube Size	Flap	Approximate* Revolutions Per Mile
						With Chain	Without Chain			
6.50-17	6	5.0	5.0	50	1500	9.0	8.4	6.50-17W	17-K	675
6.50-18	6	5.0	5.0	50	1575	9.0	8.4	6.50-18W	18-K	675
6.50-20	6	5.0	5.00R	50	1700	9.0	8.4	6.50-20W	20-K	610
7.00-17	8	5.5	5.50S	55	1775	9.7	9.0	7.00-17W	17-M	691
		5.0	5.00R			9.5	8.8			
7.00-18	8	5.5	5.50S	55	1800	9.7	9.0	7.00-18W	18-M	630
		5.0	5.00R			9.5	8.8			
7.00-20	8	5.5	5.50S	55	2000	9.7	9.0	7.00-20W	20-M	596
		5.0	5.00R			9.5	8.8			
7.80-17	8	6.0	6.00S	60	2100	10.3	9.6	7.50-17W	17-M	637
		5.5	5.50S			10.1	9.4			
7.50-18	8	6.0	6.00S	60	2200	10.3	9.6	7.50-18W	18-M	617
		5.5	5.50S			10.1	9.4			
7.50-20	8	6.0	6.00S	60	2375	10.3	9.6	7.50-20W	20-M	580
		5.5	5.50S			10.1	9.4			
8.25-17	10	6.5	6.50T	65	2600	11.2	10.4	8.25-17W	17-M	570
		6.0	6.00S			11.0	10.2			
8.25-18	10	6.5	6.50T	65	2675	11.2	10.4	8.25-18W	18-M	570
		6.0	6.00S			11.0	10.2			
8.25-20	10	6.5	6.50T	65	2900	11.2	10.4	8.25-20W	20-M	553
		6.0	6.00S			11.0	10.2			
9.00-18	10	7.0	7.00T	65	3225	12.2	11.4	9.00-18W	18-N	559
		6.5	6.50T			12.0	11.2			
9.00-20	10	7.0	7.00T	65	3450	12.2	11.4	9.00-20W	20-N	530
		6.5	6.50T			12.0	11.2			
10.00-18	12	7.5	7.50V	70	3775	13.1	12.2	10.00-18W	18-R	544
		7.0	7.00T			12.9	12.0			
10.00-20	12	7.5	7.50V	70	4000	13.1	12.2	10.00-20W	20-R	515
		7.0	7.00T			12.9	12.0			
10.00-22	12	7.5	7.50V	70	4275	13.1	12.2	10.00-22W	22-R	489
		7.0	7.00T			12.9	12.0			
10.00-24	12	7.5	7.50V	70	4550	13.1	12.2	10.00-24W	24-R	468
		7.0	7.00T			12.9	12.0			
11.00-20	12	8.0	8.00V	70	4500	13.8	12.8	11.00-20W	20-R	494
		7.5	7.50V			13.6	12.6			
11.00-22	12	8.0	8.00V	70	4750	13.8	12.8	11.00-22W	22-R	480
		7.5	7.50V			13.6	12.6			
11.00-24	12	8.0	8.00V	70	5000	13.8	12.8	11.00-24W	24-R	450
		7.5	7.50V			13.6	12.6			
12.00-20	14	8.5	8.50V	75	5275	14.6	13.6	12.00-20W	20-R	482
		8.0	8.00V			14.4	13.4			
12.00-22	14	8.5	8.50V	75	5600	14.6	13.6	12.00-22W	22-R	460
		8.0	8.00V			14.4	13.4			
12.00-24	14	8.5	8.50V	75	5925	14.6	13.6	12.00-24W	24-R	441
		8.0	8.00V			14.4	13.4			
13.00-20	16	9.0	9.00V	75	6275	15.9	14.9	13.00-20W	20-V	473
		8.5	8.50V			15.6	14.6			
13.00-24	16	9.0	9.00V	75	7025	15.9	14.9	13.00-24W	24-V	422
		8.5	8.50V			15.6	14.6			
14.00-20	18	10.0	9.00V (a)	80	7650	17.3	16.2	14.00-20W	20-V	437
		9.0				16.9	15.8			
14.00-24	18	10.0	9.00V (a)	80	8525	17.3	16.2	14.00-24W	24-V	403
		9.0				16.9	15.8			

*—For an accurate formula used in figuring revolutions per mile, see p. 135.

(a)—Dual spacing with chain—16.9; without chain—15.8. Disregard columns 7 and 8.

Data excerpted from Tire & Rim Association, Inc. Yearbook.

CCJ's Truck Specifications

COMPILED FROM DATA SUPPLIED EACH MONTH BY MANUFACTURERS

KEY TO DEFINITIONS

MAKE AND MODEL

Only Domestic Truck Models are listed.

OPTIONAL UNITS

For the express purpose of best fitting the truck to the individual job most of the models listed can be provided with optional engines, transmissions, axles, etc., and these models when so equipped are considered standard stock models.

CHASSIS LIST PRICE

The chassis list price applies to the minimum standard wheelbase with standard tires and standard equipment. All prices are F.O.B. factory. Chassis list price does not include the price of the Cab unless otherwise noted.

RECOMMENDED GROSS VEHICLE WEIGHT FOR NORMAL SERVICE

The Gross Weights published herewith are

those supplied by manufacturers as their Recommended Gross Vehicle Weights for Normal Operating Conditions, and are based upon the Maximum Authorized Tire Size listed. In actual practice the manufacturer may either increase or decrease the gross vehicle weight rating when either favorable or unfavorable operating conditions are involved. Since the proper performance of a motor truck depends upon many factors, including grades, road conditions, etc., the gross weights that a manufacturer is prepared to recommend will vary with particular conditions, and the manufacturer's own standard of safety factors. Specific recommendations, therefore, should be obtained from the manufacturer's representative.

CHASSIS WEIGHT

The chassis weight listed includes the weight of the minimum standard wheelbase chassis, with cowl, with standard tires, with standard equipment, with crankcase and cooling system full, and 5 gallons of fuel in the tank. It does not include the

weight of the Cab. This applies to C.O.E. as well as conventional chassis types. Exceptions are noted.

STANDARD TIRE SIZE

The standard tire size listed is that which is included in the Chassis List Price.

MAXIMUM AUTHORIZED TIRE SIZE

The tire size listed in this column is the maximum size recommended by the manufacturer of the chassis for the Gross Vehicle Weight for Normal Operating Conditions. It is furnished at extra cost, if it differs from the standard size. Dual rears are understood; exceptions noted.

MINIMUM STANDARD WHEELBASE

The minimum standard wheelbase is the so-called standard wheelbase on which the Chassis List Price is based.

MAXIMUM STANDARD WHEELBASE

The maximum standard wheelbase is the extreme end of the standard range of wheelbases offered by the chassis maker.

MAXIMUM BRAKE HP.

Maximum Brake Horsepower at Given R.P.M. is actual dynamometer reading without accessories.

GEAR RATIO RANGE

Gear Ratio Range in High—Ratios within the range given are available at no extra cost. Exceptions are noted.

TRACTORS

Unless given the designation (N)—meaning not available as a tractor—all standard models may be assumed to be available as tractors. Exclusively Tractor models are designated (T).

KEY TO ABBREVIATIONS

MAKES—ALL

B—Bendix.
BL—Brown-Lipe.
Bu or Bud—Buda.
BW—Bendix-Westinghouse.
C—Chevrolet.
Cl or Cla—Clark.
Con—Continental.
Cum—Cummins-Diesel.
E—Eaton.
F—Ford.
Fu—Fuller.
G—Goodyear-Hawley type.
H—Hotchkiss.
Her—Hercules.
HS—Hall-Scott.
L—Lockheed.
LH—Lockheed front, Wagner "hi-Tork" rear.
LT—Lockheed type front, Timken rear.
LW—Lockheed front, Wisconsin rear.
M—Midland.
N.P.—New Process.
O or Ow—Own.
Op or Opt—Optional.
Shu—Shuler.
Spi—Spicer.
T or Tim—Timken-Detroit Axle Co.
Tw—Timken-Detroit-Westinghouse.

TW—Timken-Detroit—Wisconsin.
WG—Wagner Gear.
Wau—Waukesha.
W or Wis—Wisconsin.
Wg—Wagner "hi-Tork."
Ws—Westinghouse.
WW—Westinghouse or Wagner

WHEELS DRIVEN

2F—Forward unit of Rear Axle Group.
2R—Rear Unit of Rear Axle Group.
4R—Forward and rear units of Rear Axle Group.
6—All wheels.

BRAKES—SERVICE

Location
4—Four Wheels, front and rear.
4r—Four Wheels, rear only.

Type
I—Internal.
X—External.

Operation

A—Air.
H—Hydraulic.

V—Vacuum.
D or Dp—Dual Primary.

BRAKES—HAND

Location
C—Center of double propeller shaft.
2—Rear wheels.
4—Four wheels.
6—Six wheels.
P—Back of Power Divider.
J—Jackshaft.
T—Transmission.
F—Driveshaft.

Type

D—Tru-Stop disk.
I—Internal.
M—Mechanical.
X—External.
PD—Two drums on rear of power divider.

BRAKE DRUMS

Material
a—Cast alloy iron.
A—American Car Foundry.
c—Cast iron.
C—Composite Front, Cast Iron in rear.

Ce—Centrifuge.
Ci—Copper iron.
Co—Composite.
D—Dayton.
E—Ermalite.
G—Gunite.
N—Nickel iron.
S—Steel.

(Where a combination of any of the above is used, the first reference mark applies to the front and the second to the rear drums.)

FRAME

Type
C—Channel.
T—Channel tapered front and rear.
L—Channel reinforced with liner.
B—Channel reinforced with both liner and fishplate.
P—Channel reinforced with plate.
TL—Channel tapered front and rear reinforced with liner.
D—Drop Center.
Tf—Tapered front.
A—Straight section sidemembers, lined with oak inserts.

Z—Reinforced (X) member frame, box type sections.

REAR AXLE

Final Drive and Type

B—Bevel.
CD—Chain Drive.
F—Full-floating.
H or Hy—Hypoid.
d—Dual range axle.
2—Double Reduction.
S—Spiral bevel.
W—Worm.
3/4—Three Quarters Floating.
1/2—Semi-floating.
T—Torque Tube.

GEAR RATIOS

(**) Only one ratio.

Drive and Torque

H—Hotchkiss (springs).
R—Radius Rods.
L—Parallel Torque Rods.
T—Torque Arm.

GOVERNOR STANDARD

V—Yes.
N—No.

KEY TO REFERENCES

c.f.—Cab Forward design.

c.o.e.—Cab-Over-Engine design.

(D)—Diesel-engine equipped.

(T)—Designed for tractor use only.

(C)—Converted Ford or Chevrolet Model.

A—Denotes "Includes Cab" when used with weights or prices.

CHEVROLET

†—Forward control chassis for Door-to-Door delivery bodies. These chassis do not have cowl.
*—Includes spare tire, full fuel tank and cooling system.
A—7.50/20 can be used on the front with no decrease in G.V.W. when 8.25/20 are used on dual rear wheels.
A—2.25/20 front tires are required when 9.00/20 dual rears are used.
††—Own Loadmaster engine available at extra cost.
A—2.25/20 front tires are required when 9.00/20 dual rears are used.
††—Diameter: (Average) Front, 2.658; Front Center, 2.718; Rear Center, 2.718; Rear, 2.778. Total Length 5 1/2.
†—speed transmission available.
††—Also available in 5.14 ratio.
††—5.43 available.
††—Two speed axle available.

CORBITT

*—Available with optional tires and axles for less G.V.W. rating.
††—Also available with Cummins HRB 600, HRBB600 and NHB600.

CROSLEY

**—Pick-up truck only; panel delivery 1360.
†—Front 1.375 x 1.312; 3 Center 1.375 x .870; 1 Rear 1.500 x 1.499.

DODGE

A—Front only: Rear 7.00/16S.
*—Front only: Rear 8.25/16.
†—Front only: Rear 6.50/20S.
†—Front only: Rear 7.50/20.
†—Front only: Rear 9.00/20.
†—Front only: Rear 10.00/20.
†—Rear of transfer case.

DUPLEX

†—Torque Divider, Timken T70-2 speed.

FEDERAL

*—Diesel engine obtainable.
†—Five speed transmission obtainable.
†—Auxiliary transmission Spicer 6231B with 3 forward speeds.
†—Auxiliary transmission Spicer 703F with 3 forward speeds or 8031.

†—55M, 60M and 65M have single speed, double reduction rear axle.

†—Radius rods obtainable.

†—For wheelbases below 196"

†—For shorter wheelbases, 10 x 3 1/4 x 1/4.

††—Diesel engine obtainable.

†—Auxiliary transmission Spicer 703F or 8031 with 3 forward speeds.

††—Overdrive optional.

†—Torque Divider Timken T70-2 speed, T50 obtainable.

†—SW3013 obtainable.

†—SW3010 or SD3020 obtainable.

A—Rear only.

FORD

*—Air brake equipment optional on F-8, Front 16 x 2 1/4, Rear 16 1/2 x 5 1/2, lining area 533 sq. in.
†—Reinforcement 6.58 x 2.21 x .125 extended to include front spring rear brackets and rear spring front brackets.
†—Reinforcement 8.5 x 2.56 x .15 starts at rear of front spring rear brackets and ends behind rear spring front brackets.
†—Cowl to axle.

KENWORTH

††—Timken T13129 PA Trailing Axle.

OSHKOSH

A—Includes cab.
†—1091 cu. in.
††—Hydraulic coupling.
††—Buda 6DC844 optional.
††—Other Cummins 6 cylinder engines optional.
†—Includes cab and dual tires on front, center and rear axles.
A—Dependent upon engine.

REO

†—Model 331 engine can be furnished.
†—Two speed axle available.
†—Double reduction and 2 speed available.

STERLING

†—Rear only: Front 11.00/24.
†—Rear only: Front 11.00/22.
†—Own EJ three speed auxiliary transmission furnished.
†—Timken T70 two speed torque divider furnished.
†—Parking brake at rear of auxiliary transmission.
†—Rear only: Front 12.00/24.
†—Rear only: Front 14.00/24.
†—Rear only: Front 16.00/24.
†—1125 cu. in.
††—Own model FJ three speed auxiliary transmission furnished.
††—Timken T76 two speed transfer case furnished.
††—Timken T77 two speed transfer case furnished.
†—Parking brake at rear of transfer case.

††—Tapered, 9 x 7 x 3 1/4 x 1/4.
††—Also available with Cummins Diesel engine and appropriate transmission.

STUDEBAKER

†—Two speed 6.13-8.10 and H.D. 6.20 or 6.80 optional.
††—Two speed 6.13-8.10 optional.

TRUCKSTELL

*—Single front, dual rear.
††—With Baums auxiliary transmission.
††—With Baums power divider.
††—2 speed locked in low axle ratio.
†—Including slip-over reinforcing frame channels.

WARD LA FRANCE

†—Available with optional rear axles.
††—Available with 11.00/22 or 12.00/20 tires for G.V.W. of 60,000 lbs and optional front and rear axles.
††—Auxiliary transmission Fuller 3A65, 3B65, 3A92 and 3B92.

WILLYS

*—Complete vehicle-Pick-up type body.
†—Three speed transmission, 2 speed transfer case.
†—Or Spicer 53-2 at discretion of manufacturer only.

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For Full Flow where it's needed...

SEALED POWER MD-50 STEEL OIL RING WITH THE FULL-FLOW SPRING

Surplus slots for full flow of oil!
 Can't block any piston oil hole!
 Long curves for greater bearing area!
 Double the drainage with half the drag!
 Thousands of extra miles between ring jobs!
 Best for oil control even in
BADLY TAPERED
 and
OUT-OF-ROUND BORES

FOR DOUBLE RING-MILEAGE
IN YOUR FLEET



Sealed Power KromeX Full-Flow Ring Sets are the finest ring sets made. Top compression ring is of chrome alloy iron, with solid chrome face, lapped at the factory to a light-tight finish for quick seating. Chrome on rail faces of the MD-50 ring means twice the mileage.



SEALED POWER CORPORATION, MUSKEGON, MICHIGAN

Sealed Power Piston Rings

BEST IN NEW TRUCKS

BEST IN OLD TRUCKS

(Continued from Page 148)

Line Number	MAKE AND MODEL	WHEEL-BASE	Gross Vehicle Weight	Chassis List Price	TIRE SIZES			ENGINE DETAILS					TRANS-MISSION		REAR AXLE			FRONT AXLE	BRAKES				FRAME		
					D-dual rear	Standard Front and Rear	(See chassis Weight)	No. of Cylinders	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M.	Main Bore and Diameter	Governor Standard	Make and Model	Gear and Type	Drive & Torque		Gear Ratio	Make and Model	SERVICE				
																					Location	Operation		Lining Area	Drum Material	Stand Location	C-A Dimensions (Min. Std. W. B.)	Type
1	Dodge Cont'd	152	1700	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
2	B-3-JA	152	1700	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
3	B-3-JA	152	1700	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
4	B-3-JA	152	1700	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
5	B-3-JA	152	1700	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
6	B-3-JA	152	1700	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
7	B-3-JA	152	1700	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
8	B-3-JA	152	1700	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
9	B-3-JA	152	1700	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
10	B-3-JA	152	1700	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
11	B-3-JA	152	1700	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
12	B-3-JA	152	1700	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
13	B-3-JA	152	1700	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
14	B-3-JA	152	1700	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
15	B-3-JA	152	1700	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
16	B-3-JA	152	1700	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
17	B-3-JA	152	1700	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
18	B-3-JA	152	1700	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
19	B-3-JA	152	1700	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
20	B-3-JA	152	1700	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
21	B-3-JA	152	1700	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
22	B-3-JA	152	1700	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
23	Dodge Cont'd	136	2200	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
24	B-3-JA	136	2200	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
25	B-3-JA	136	2200	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
26	B-3-JA	136	2200	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
27	B-3-JA	136	2200	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
28	B-3-JA	136	2200	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
29	B-3-JA	136	2200	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
30	B-3-JA	136	2200	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
31	Dodge Cont'd	136	2200	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
32	B-3-JA	136	2200	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
33	B-3-JA	136	2200	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
34	B-3-JA	136	2200	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
35	B-3-JA	136	2200	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
36	B-3-JA	136	2200	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
37	B-3-JA	136	2200	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
38	B-3-JA	136	2200	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
39	B-3-JA	136	2200	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
40	B-3-JA	136	2200	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
41	B-3-JA	136	2200	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
42	B-3-JA	136	2200	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
43	B-3-JA	136	2200	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
44	B-3-JA	136	2200	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
45	B-3-JA	136	2200	6.50/20	9.00/20	Own T-318	6-3 3/4	2506	114	3600	YNP-89410	5 1/2	YNP-89410	5	Own T-318	SF	H 6.13-8.15	Own T-318	041HV	396	5536	TX	TX	TX	60 1/2 x 2 1/2 x 10 1/2
46	B-3																								

For Key to References and Abbreviations See Page 147

Turn to Page 152, Please!

When you need to check the oil, you can check it without need for special tools or maintenance under-hood. In other words, just as easy as frame a picture, your rule is simple. Call your dealer and Hydroboost. You pick up the truck, don't pay a cent, put on the new

Export Sales
Avenue, N
Eclipse of



THE TO
COMM

If Your Drivers Are Complaining About Brakes...

YOU'VE GOT A BIG LOAD ON
BACK SO TAKE IT EASY!



YEAH? HOW CAN I
TAKE IT EASY WHEN
THERE ISN'T ENOUGH
POWER BRAKING
ON THIS WAGON?

When your drivers gripe about the brakes on your trucks being unsafe, the chances are those trucks need stepped-up power braking!

You can easily find out if this is your trouble by checking your service records. If the trucks have need for frequent brake relining and brake maintenance it's almost a sure sign that your trucks are under-braked.

In other words, the brakes should be Load-Rated, just as booster springs, bigger tires, and a beefed-up frame are added to handle heavier loads or when your runs are over hilly or rough terrain.

Call your nearest Bendix* Vacuum Power Brake dealer about Load-Rating your brakes. Only Bendix* Hydrovac* has a range of models wide enough to let you pick a power brake to exactly fit your load. You don't pay for too much or buy too little when you put on a Bendix Load-Rated Hydrovac. *REG U S PAT. OFF.

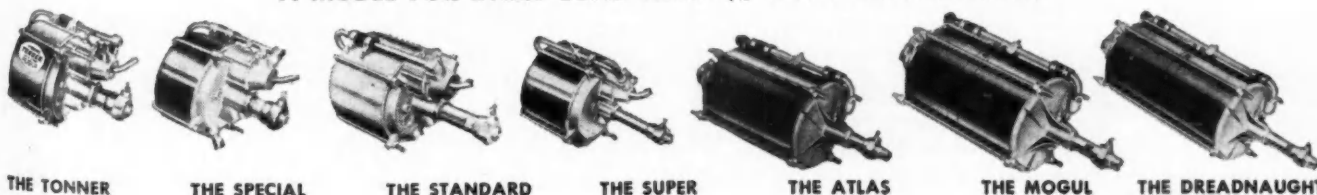
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It's Time to
MATCH the BRAKING
to the LOAD with
Bendix
HYDROVAC
THE
"Load Rated"
POWER BRAKE!

A MODEL FOR EVERY LOAD FROM ½ TON TO THE BIGGEST!



THE TONNER

THE SPECIAL

THE STANDARD

THE SUPER

THE ATLAS

THE MOGUL

THE DREADNAUGHT

COMMERCIAL CAR JOURNAL, April, 1952

Line Number	MAKE AND MODEL	Chassis List Price	WHEEL-BASE		Gross Vehicle Weight	(Chassis Weight)	TIRE SIZES		ENGINE DETAILS					TRANS-MISSION		REAR AXLE			FRONT AXLE	BRAKES				C-A Dimensions (Min. Std. W. B.)	FRAME					
			Minimum Standard	Maximum Standard			Rear Standard	Dual rear S-Single rear	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M.	Number and Diameter of Bearings	Governor Standard	Make and Model	Forward Speeds	Make and Model		Gear and Type	Drive & Torque	Gear Ratio	Range in High			Make and Model	SERVICE			Type
																											Line Area	Drum Area	Hand Location	
Type																														
Side Rail Dimensions																														
1	Ford...Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
2	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
3	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
4	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
5	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
6	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
7	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
8	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
9	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
10	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
11	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
12	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
13	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
14	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
15	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
16	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
17	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
18	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
19	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
20	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
21	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
22	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
23	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
24	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
25	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
26	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
27	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
28	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
29	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
30	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
31	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
32	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
33	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
34	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
35	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
36	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
37	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
38	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
39	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
40	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
41	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
42	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
43	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own 41T	HF	H5.14-6.67	Own ZRW	O41H	302	506Co	TX	84.00x7.08x2.8x1	TL					
44	Ford...C.O.E.-Cont'd	14000	134	134	4476x50/20-6	7.50/20-8	Own SHW	6-3 3x4 2.29x6.8	2396.8	180	95-3300-3	2.87x5.0	N	Own 41T	4	Own														

For Key to References and Abbreviations See Page 147

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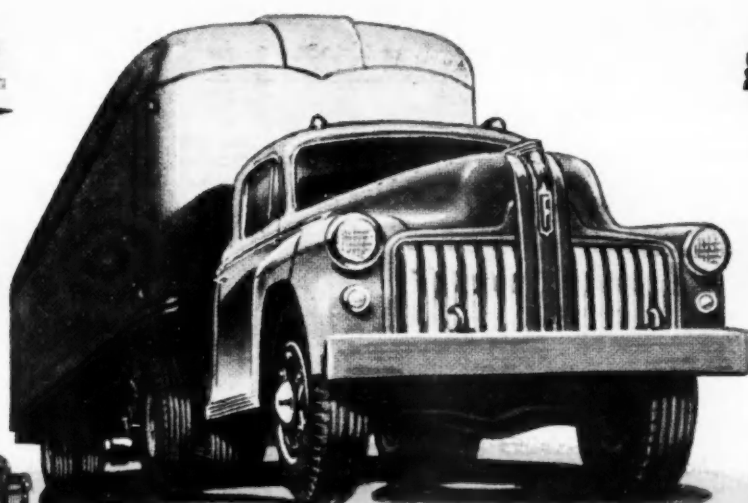
A black and white photograph of a busy city street. In the foreground, a large, light-colored delivery truck with a box trailer is moving. Behind it, another truck with a rounded cab is visible. The background shows tall city buildings and a street sign featuring a portrait.

"EXIDE" "PORMAX" and "VITREX" Reg. Trade-marks U. S. Pat. Off.
"SILVIUM" and "ULTRA START" T.M. Reg. applied for

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Line Number	MAKE AND MODEL	Chassis List Price	WHEEL-BASE	TIRE SIZES		ENGINE DETAILS						TRANS-MISSION		REAR AXLE		FRONT AXLE	BRAKES				C-A Dimensions (Min. Std. W. B.)	FRAME																																																																																																																																																																																																																																																												
				D-dual rear S-single rear	Maximum Tire Size (See definition)	Chassis Weight (Gross Vehicle Service For Normal Service)	No. of Cylinders, Bore and Displacement	Comp. Ratio	Torque lb. ft.	H.P. at R.P.M.	Number Diameter Mainline	Governor Standard	Make and Model	Forward Speeds	Make and Model		Gear and Type	Drive & Torque	Gear Ratio	Make and Model			Location	Type	Lining	Drum	Drum Material	Hand Location	Type																																																																																																																																																																																																																																																					
1	Reo-Cont'd		130	130	11.00/20	8155	6-4x4	427.6	4.348	151-2800	7-1/2x12.1	Y Cla 290V	5/Tim Q1000	HF	H 42-8	Q900	W441A	620	928	var	TX	65x13	T																																																																																																																																																																																																																																																											
2	F-23T		150	150	10.00/20	7865	6-4x4	427.6	4.348	151-2800	7-1/2x12.1	Y Cla 290V	5/Tim Q1000	HF	H 16-6	Q900	W441A	620	928	var	TX	105x13	T																																																																																																																																																																																																																																																											
3	F-23B		170	170	10.00/20	8035	6-4x4	427.6	4.348	151-2800	7-1/2x12.1	Y Cla 290V	5/Tim Q1000	HF	H 16-6	Q900	W441A	620	928	var	TX	105x13	T																																																																																																																																																																																																																																																											
4	F-23L		185	185	11.00/22	8195	6-4x4	427.6	4.348	151-2800	7-1/2x12.1	Y Cla 290V	5/Tim Q1000	HF	H 16-6	Q900	W441A	620	928	var	TX	120x13	T																																																																																																																																																																																																																																																											
5	Starling		143	153	10.00/20	8107	6-4x4	427.6	4.348	151-2800	7-1/2x12.1	Y Cla 290V	5/Tim Q1000	HF	H 16-6	Q900	W441A	620	928	var	TX	105x13	T																																																																																																																																																																																																																																																											
6	TD		173	181	10.00/20	8125	6-4x4	427.6	4.348	151-2800	7-1/2x12.1	Y Cla 290V	5/Tim Q1000	HF	H 16-6	Q900	W441A	620	928	var	TX	105x13	T																																																																																																																																																																																																																																																											
7	TD		173	181	10.00/20	8125	6-4x4	427.6	4.348	151-2800	7-1/2x12.1	Y Cla 290V	5/Tim Q1000	HF	H 16-6	Q900	W441A	620	928	var	TX	105x13	T																																																																																																																																																																																																																																																											
8	TD		173	181	10.00/20	8125	6-4x4	427.6	4.348	151-2800	7-1/2x12.1	Y Cla 290V	5/Tim Q1000	HF	H 16-6	Q900	W441A	620	928	var	TX	105x13	T																																																																																																																																																																																																																																																											
9	TD		173	181	10.00/20	8125	6-4x4	427.6	4.348	151-2800	7-1/2x12.1	Y Cla 290V	5/Tim Q1000	HF	H 16-6	Q900	W441A	620	928	var	TX	105x13	T																																																																																																																																																																																																																																																											
10	TD		173	181	10.00/20	8125	6-4x4	427.6	4.348	151-2800	7-1/2x12.1	Y Cla 290V	5/Tim Q1000	HF	H 16-6	Q900	W441A	620	928	var	TX	105x13	T																																																																																																																																																																																																																																																											
11	TD		173	181	10.00/20	8125	6-4x4	427.6	4.348	151-2800	7-1/2x12.1	Y Cla 290V	5/Tim Q1000	HF	H 16-6	Q900	W441A	620	928	var	TX	105x13	T																																																																																																																																																																																																																																																											
12	TD		173	181	10.00/20	8125	6-4x4	427.6	4.348	151-2800	7-1/2x12.1	Y Cla 290V	5/Tim Q1000	HF	H 16-6	Q900	W441A	620	928	var	TX	105x13	T																																																																																																																																																																																																																																																											
13	TD		173	181	10.00/20	8125	6-4x4	427.6	4.348	151-2800	7-1/2x12.1	Y Cla 290V	5/Tim Q1000	HF	H 16-6	Q900	W441A	620	928	var	TX	105x13	T																																																																																																																																																																																																																																																											
14	TD		173	181	10.00/20	8125	6-4x4	427.6	4.348	151-2800	7-1/2x12.1	Y Cla 290V	5/Tim Q1000	HF	H 16-6	Q900	W441A	620	928	var	TX	105x13	T																																																																																																																																																																																																																																																											
15	TD		173	181	10.00/20	8125	6-4x4	427.6	4.348	151-2800	7-1/2x12.1	Y Cla 290V	5/Tim Q1000	HF	H 16-6	Q900	W441A	620	928	var	TX	105x13	T																																																																																																																																																																																																																																																											
16	TD		173	181	10.00/20	8125	6-4x4	427.6	4.348	151-2800	7-1/2x12.1	Y Cla 290V	5/Tim Q1000	HF	H 16-6	Q900	W441A	620	928	var	TX	105x13	T																																																																																																																																																																																																																																																											
17	TD		173	181	10.00/20	8125	6-4x4	427.6	4.348	151-2800	7-1/2x12.1	Y Cla 290V	5/Tim Q1000	HF	H 16-6	Q900	W441A	620	928	var	TX	105x13	T																																																																																																																																																																																																																																																											
18	TD		173	181	10.00/20	8125	6-4x4	427.6	4.348	151-2800	7-1/2x12.1	Y Cla 290V	5/Tim Q1000	HF	H 16-6	Q900	W441A	620	928	var	TX	105x13	T																																																																																																																																																																																																																																																											
19	TD		173	181	10.00/20	8125	6-4x4	427.6	4.348	151-2800	7-1/2x12.1	Y Cla 290V	5/Tim Q1000	HF	H 16-6	Q900	W441A	620	928	var	TX	105x13	T																																																																																																																																																																																																																																																											
20	TD		173	181	10.00/20	8125	6-4x4	427.6	4.348	151-2800	7-1/2x12.1	Y Cla 290V	5/Tim Q1000	HF	H 16-6	Q900	W441A	620	928	var	TX	105x13	T																																																																																																																																																																																																																																																											
21	TD		173	181	10.00/20	8125	6-4x4	427.6	4.348	151-2800	7-1/2x12.1	Y Cla 290V	5/Tim Q1000	HF	H 16-6	Q900	W441A	620	928	var	TX	105x13	T																																																																																																																																																																																																																																																											
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23	TD		173	181	10.00/20	8125	6-4x4	427.6	4.348	151-2800	7-1/2x12.1	Y Cla 290V	5/Tim Q1000	HF	H 16-6	Q900	W441A	620	928	var	TX	105x13	T																																																																																																																																																																																																																																																											
24	TD		173	181	10.00/20	8125	6-4x4	427.6	4.348	151-2800	7-1/2x12.1	Y Cla 290V	5/Tim Q1000	HF	H 16-6	Q900	W441A	620	928	var	TX	105x13	T																																																																																																																																																																																																																																																											
25	TD		173	181	10.00/20	8125	6-4x4	427.6	4.348	151-2800	7-1/2x12.1	Y Cla 290V	5/Tim Q1000	HF	H 16-6	Q900	W441A	620	928	var	TX	105x13	T																																																																																																																																																																																																																																																											
26	TD		173	181	10.00/20	8125	6-4x4	427.6	4.348	151-2800	7-1/2x12.1	Y Cla 290V	5/Tim Q1000	HF	H 16-6	Q900	W441A	620	928	var	TX	105x13	T																																																																																																																																																																																																																																																											
27	TD		173	181	10.00/20	8125	6-4x4	427.6	4.348	151-2800	7-1/2x12.1	Y Cla 290V	5/Tim Q1000	HF	H 16-6	Q900	W441A	620	928	var	TX	105x13	T																																																																																																																																																																																																																																																											
28	Studebaker		258	258	6.50/16S	2125	6-4x4	170.7	0.138	85-4000	2-1/2x13.5	N Own 678519	3-0Wm 680233	HF	H 4-89	4-09	W441H	170	276	CO21	40	72x3	T																																																																																																																																																																																																																																																											
29	TD		112	112	4.00	2365	6-4x4	170.7	0.138	85-4000	2-1/2x13.5	N Own 678519	3-0Wm 680233	HF	H 4-89	4-09	W441H	170	276	CO21	40	72x3	T																																																																																																																																																																																																																																																											
30	TD		122	122	6.10	2400	6-4x4	170.7	0.138	85-4000	2-1/2x13.5	N Own 678519	3-0Wm 680233	HF	H 4-89	4-09	W441H	170	276	CO21	40	72x3	T																																																																																																																																																																																																																																																											
31	TD		122	122	6.10	2400	6-4x4	170.7	0.138	85-4000	2-1/2x13.5	N Own 678519	3-0Wm 680233	HF	H 4-89	4-09	W441H	170	276	CO21	40	72x3	T																																																																																																																																																																																																																																																											
32	TD		122	122	6.10	2400	6-4x4	170.7	0.138	85-4000	2-1/2x13.5	N Own 678519	3-0Wm 680233	HF	H 4-89	4-09	W441H	170	276	CO21	40	72x3	T																																																																																																																																																																																																																																																											
33	TD		122	122	6.10	2400	6-4x4	170.7	0.138	85-4000	2-1/2x13.5	N Own 678519	3-0Wm 680233	HF	H 4-89	4-09	W441H	170	276	CO21	40	72x3	T																																																																																																																																																																																																																																																											
34	TD		122	122	6.10	2400	6-4x4	170.7	0.138	85-4000	2-1/2x13.5	N Own 678519	3-0Wm 680233	HF	H 4-89	4-09	W441H	170	276	CO21	40	72x3	T																																																																																																																																																																																																																																																											
35	TD		122	122	6.10	2400	6-4x4	170.7	0.138	85-4000	2-1/2x13.5	N Own 678519	3-0Wm 680233	HF	H 4-89	4-09	W441H	170	276	CO21	40	72x3	T																																																																																																																																																																																																																																																											
36	TD		122	122	6.10	2400	6-4x4	170.7	0.138	85-4000	2-1/2x13.5	N Own 678519	3-0Wm 680233	HF	H 4-89	4-09	W441H	170	276	CO21	40	72x3	T																																																																																																																																																																																																																																																											
37	TD		122	122	6.10	2400	6-4x4	170.7	0.138	85-4000	2-1/2x13.5	N Own 678519	3-0Wm 680233	HF	H 4-89	4-09	W441H	170	276	CO21	40	72x3	T																																																																																																																																																																																																																																																											
38	TD		122	122	6.10	2400	6-4x4	170.7	0.138	85-4000	2-1/2x13.5	N Own 678519	3-0Wm 680233	HF	H 4-89	4-09	W441H	170	276	CO21	40	72x3	T																																																																																																																																																																																																																																																											
39	Ward La Fr.		149	220	25000	9500	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	11.00/20	

Turn to Page 156. Please)



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1½ to 35 TONS
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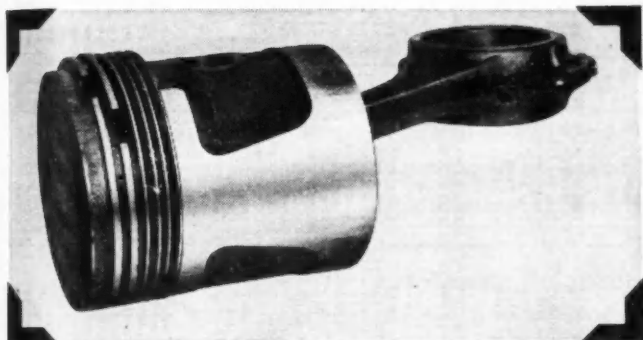
See your present Federal dealer or write for detailed literature

COMMERCIAL CAR JOURNAL, April, 1952

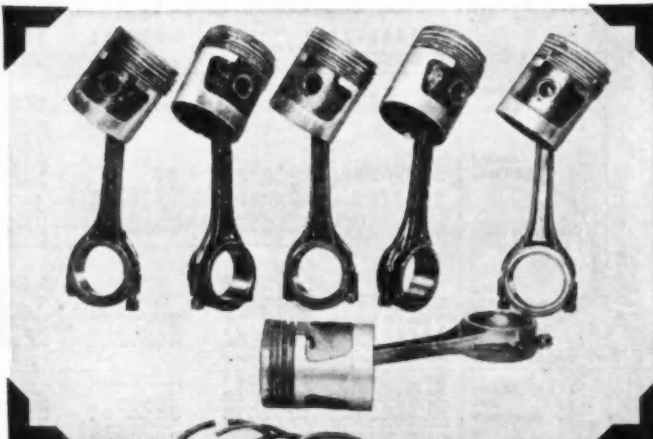
STANDARD ENGINEER'S REPORT

DATA	
LUBRICANT	RPM Delo Oils
UNIT	1 1/2 ton truck - 6 cyl. Ford - Model F5 engine
CONDITIONS	Low engine temperatures - City deliveries
PERIOD	2 years
FIRM	Pacific Cheese Division of Borden, San Francisco, Cal.

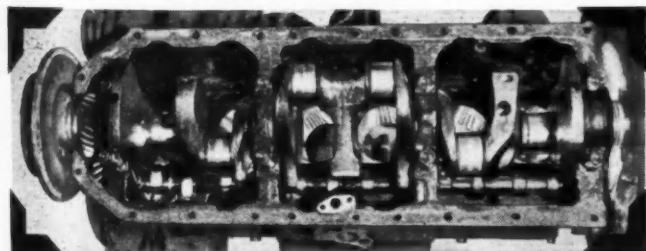
Only 0.004 inch wear in 68,740 miles stop-and-go driving!



LUBRICATED WITH RPM DELO SPECIAL OIL, these pistons from an engine overhauled for the first time after two years and nearly 70,000 miles of tough delivery-service operation, had no broken or stuck rings. Grooves were clean and all oil-return holes open. All bearings, including mains, were in good



condition. Reboring of the cylinders was not necessary because none of the six cylinders was out of round and taper ran only 0.004 to 0.0045 inch.



THE ENGINE WAS EXCEPTIONALLY CLEAN as this picture indicates. Cylinder walls were free of lacquer and there were no deposits in valve chambers. Only a thin carbon film was in the bottom of the pan. Valves, pistons, bearings, all parts except rings, were put back in service.

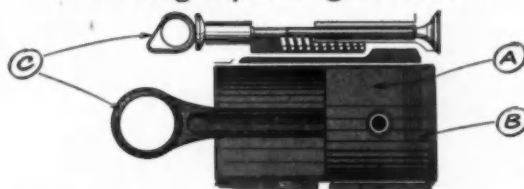
REMARKS: This engine was used in Sacramento under widely varying temperatures. Its stop and go operation seldom allowed engine temperatures to reach normal. There is an RPM DELO Lubricating Oil to meet every heavy-duty engine operating condition.



FREE BOOKLET on the RPM DELO Oils gives you complete information. Write or ask for it today.



How RPM DELO Oils meet tough operating conditions



- Contain special additives that provide metal-adhesion qualities... keep oil on parts whether they are hot or cold, running or idle.
- Antioxidant resists deterioration of oil and formation of lacquer... prevents ring-sticking. Detergent keeps parts clean, helps prevent scuffing.
- Special compounds stop corrosion of any bearing metal, and oil foaming in both wet and dry sump engines.

FOR MORE INFORMATION about this or other petroleum products of any kind, or the name of your nearest distributor handling them, write or call any of the companies listed below.

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225 Bush Street • San Francisco 20, California

THE CALIFORNIA COMPANY
P. O. Box 780 • Denver 1, Colorado

STANDARD OIL COMPANY OF TEXAS
P. O. Box 862 • El Paso, Texas

Line Number	MAKE AND MODEL	Chassis List Price	TIRE SIZES		ENGINE DETAILS						TRANS-MISSION		REAR AXLE			FRONT AXLE		BRAKES				FRAME				
			Standard Rear	Dual rear S-single rear	Chassis Weight (See definition)	Gross Vehicle Weight for Normal Service	Model	No. of Cylinders	Stroke and Displacement	Comp. Ratio	Torque lb. ft.	H.P. at R.P.M.	Main Bearings Diameter	Governor Standard Length	Make and Model	Forward Speeds	Clear and Type	Drive & Torque	Range in High	Make and Model	SERVICE			C-A Dimensions (Min. Std. W. B.)	Type	
																					Operation		Lining			Drum	Drum Material	Hand Location
Continued from Page 1561																										
Kenworth																										
10	F.W.D.	H6x8G	121509	10.00/20	Wau MZA KKB	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
11	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
12	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
13	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
14	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
15	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
16	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
17	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
18	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
19	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
20	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
21	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
22	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
23	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
24	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
25	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
26	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
27	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
28	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
29	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
30	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
31	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
32	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
33	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
34	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
35	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
36	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
37	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
38	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
39	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
40	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
41	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
42	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
43	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
44	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
45	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
46	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
47	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
48	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
49	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
50	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
51	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
52	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
53	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
54	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
55	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
56	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
57	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
58	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
59	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
60	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
61	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
62	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
63	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL			
64	(D)	H6x8G	121509	10.00/20	GMC 4-71	6-4x6	404.5	6291	130	3000	7-2x12	Y Ova H	10 Owa H	H	SF	SE	** -7.45	Ova H	W61A	6731130A	T6	73x93x3	TL</			

For Key to References and Abbreviations See Page 147

Turn to Page 110 Please

MACK TRUCKS...

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Now, more than ever, it pays to look upon your truck purchase as an investment . . . one that should yield you long-term dividends in dependability and economy. Measured that way, you'll find there's no other truck to match a Mack for long-lasting, profit-making performance.

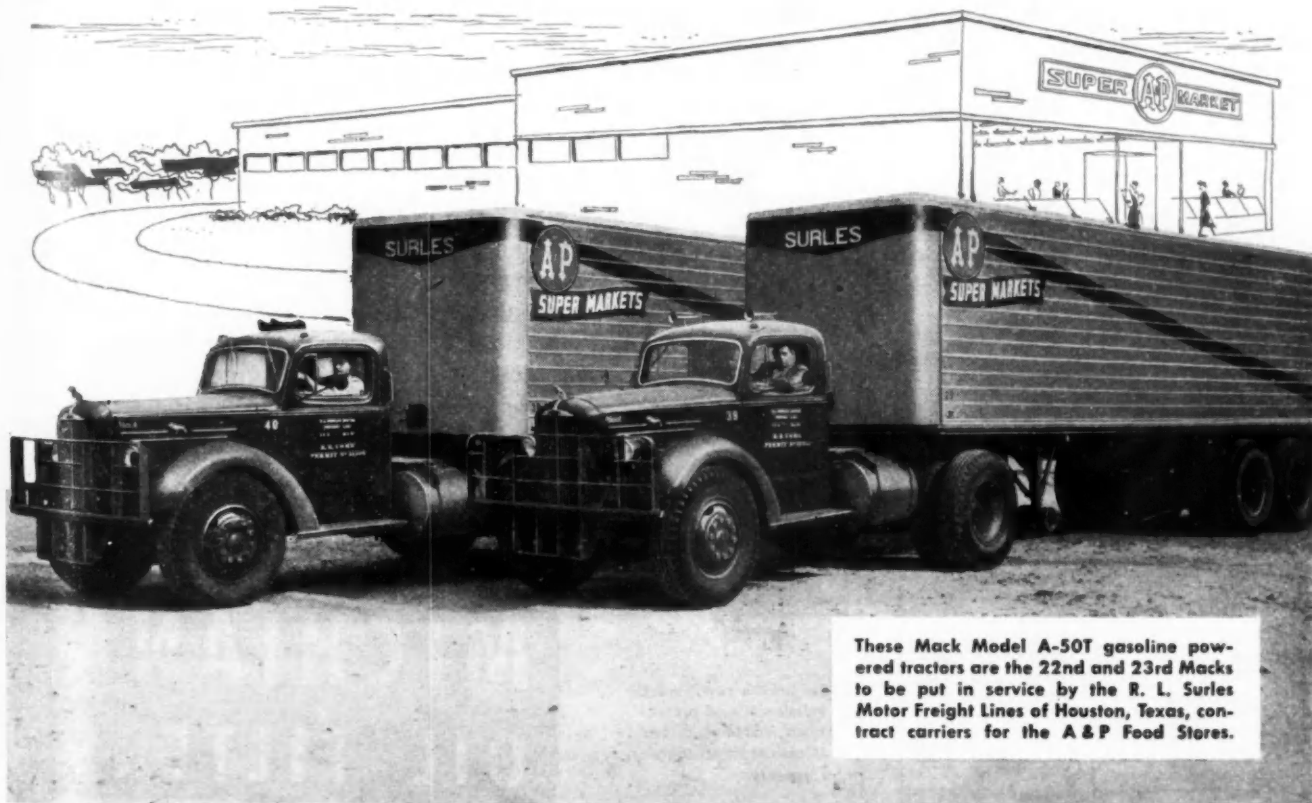
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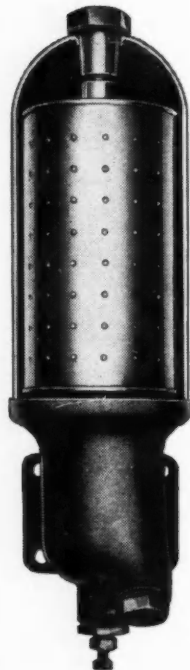
These Mack Model A-50T gasoline powered tractors are the 22nd and 23rd Macks to be put in service by the R. L. Surles Motor Freight Lines of Houston, Texas, contract carriers for the A & P Food Stores.

For Key to References and Abbreviations See Page 147
 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100
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(Continued from Page 158)

Line Number	MAKE AND MODEL	Chassis List Price	WHEEL-BASE		TIRE SIZES		ENGINE DETAILS										TRANSMISSION		REAR AXLE			FRONT AXLE		BRAKES					FRAME																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
			Minimum Standard	Maximum Standard	Gross Vehicle Weight (See definition)	Standard Front and Rear	Maximum Authorized Tire Size (Dually less noted)	Make and Model	No. of Cylinders and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M.	Number and Length of Main Bearings	Governor Standard	Make and Model	Forward Speeds	Make and Model	Gear and Type	Drive & Torque	Gear Ratio	Range in High	Make and Model	Make Location Type	Lining Area	Drum Area	Drum Material	Hand Location Type	C-A Dimensions (Min. Std. W. B.)	Side Rail Dimensions	Type																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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For Key to References and Abbreviations See Page 147

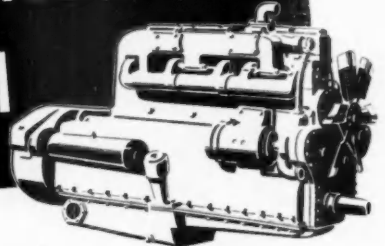


Cut-away view shows location of filter element in filter housing.



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A Look at Spark Plug Problems

Excerpts from two papers presented at the SAE National Passenger Car, Body & Materials Meeting, Detroit, Mar. 4, By Howard H. Vogel, Dir. of Eng., Champion Spark Plug Co.; and R. C. Beaubier, H. J. Chalf, and M. M. Roench, of Ethyl

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Mr. Vogel—

IN the present passenger car engine, the old adage, that a cold plug was needed for a hot engine, is not holding true. It has been the feeling for years that high compression engines being driven at high speeds should have a cold operating plug. Today in our modern engines, which have compression ratios between 7.2 and 8 to 1, and which are equipped with over-drive or fourth gear, we find that the horsepower required to move this vehicle over the road at 70 to 80 miles per hour is only a small part of the horsepower that is available from the engine. Consequently, the spark plug situation has to be taken into account.

One of the main problems which faces all car manufacturers is the fact that when new models are brought out on the market, the original spark plugs recommended for many of these cars are the plugs which have been used on the dynamometer stands; and engineers who set up the engines on the stand are trying to find out how much horsepower the engine develops, along with life tests of the engine components. Many times with full throttle, full power ratings, the standard spark plugs which they had been using for some time may be slightly on the hot side and may cause a slight pre-ignition. To fight this problem, a colder plug is used which will eliminate this situation from their dynamometer test.

Many times these spark plugs would be approved, production released, and then after the customer drives the car it is found the spark plug fouls. This condition may be due to the customer not driving the car with as high a percentage of the available power as he did with his lower compression engines. This is borne out in the fact that city driving has created the greatest fouling problems.

Along with this fouling problem, there arises a fuel deposit problem which creates a skip or miss in the engine after approximately 1500 to 3000 miles of driving. The deposits on the insulators vary considerably in different localities, but we found that the majority of these deposits are broken down into about four basic types—lead sulphate, lead oxide, barium sulphate and lead phosphate.

We believe that the barium sulphate (TURN TO PAGE 164, PLEASE)

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Spark Plug Problems

Continued from Page 162

phate and the lead phosphate may come from some of the detergent oils. It has been found from our tests that when the fuel deposit is of a fluffy nature on the insulator nose, shorting out does not occur as quickly as when the deposit is of a vitreous nature. In actual resistance tests, we find that as the temperature increases, the re-

sistance across the insulator nose seems to drop very suddenly after the insulator nose had attained a temperature of around 500 to 700°F. From the results of our examination, a slight skip or miss will be felt in the engine on a hard pull or at high speeds. We also find that of the fuel deposits which contain a heavy lead phosphate content, the material has a tendency to attack the insulator under certain operating conditions.

At the present time, the general solution for curing the skip or miss

has been to clean the plugs at intervals of about 3000 miles, file the sparking surfaces of the electrodes, and the car will then operate satisfactorily. It has also been noted that some of these conditions exist mainly when the car is new, but after it is broken in, the deposit situation seems to lessen slightly.

We have also found in many cases that the problem of spark plug installation has not been seriously considered by the car manufacturers nor by the service departments at the different dealers. Many times spark plugs are installed properly at the factories, and after delivery of the cars to the dealers, the mechanic will remove the plugs to check them, and then not properly reinstall them. With improper installation of the correct heat range plug, we find that the plug will tend to overheat and the deposit problem becomes more serious. It is also true that a hotter operating plug, say one step hotter, can be used very satisfactorily in many of the high compression engines if properly installed.

It is not very often that people drive over 70 to 75 miles per hour on the road, since state laws and driving conditions are a factor in the high speed operation of the vehicle. The hotter type spark plug will operate satisfactorily and will provide a longer fouling path, thereby lengthening the period of time when the spark plug should be serviced.

In conjunction with proper installation of spark plugs, we also find that the elimination of induced current (TURN TO PAGE 166, PLEASE)

Automotive Exhibit



The Willett Co., a large Chicago trucking "department store" had this display at the 44th annual automobile show in February. Scale model trucks of 15 different types travelled continuously over a simulated street from one Willett garage to another. The display was to show the different kinds of vehicles used in the Willett customer service. The display was designed and built in company shops.

COMMERCIAL CAR JOURNAL, April, 1952

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OVERSIZE BUSHING

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METAL FRAME EMBEDDED INTO RECESS . . . CAN'T SLIP!

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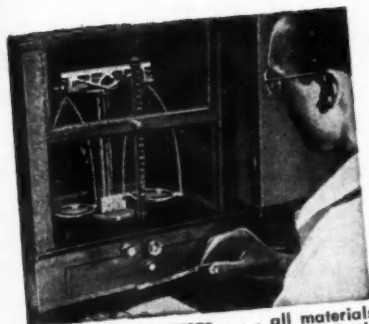
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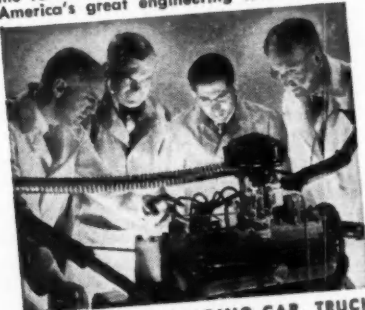
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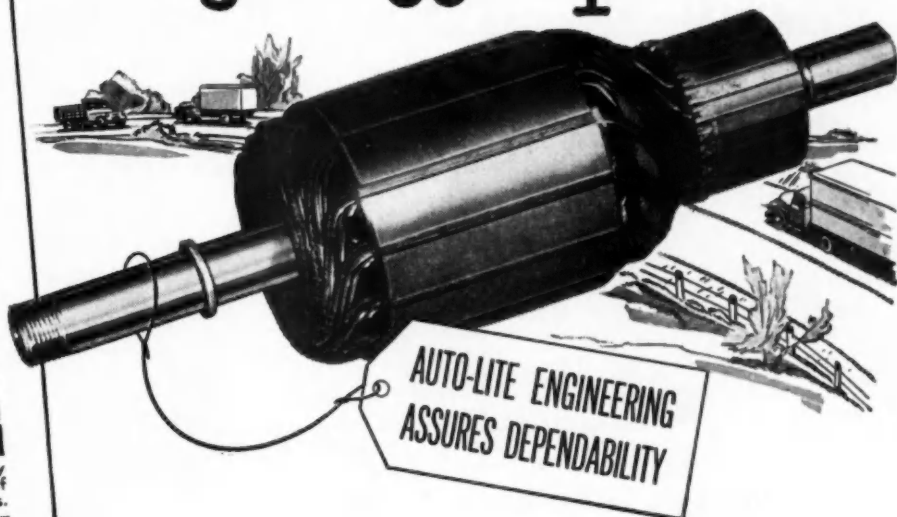


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Electrical Equipment

Spark Plug Problems

Continued from Page 164

between ignition cables is becoming more and more of a factor with the use of higher compressions. It has come to our attention time and time again that the skip or miss in an automobile can be eliminated with the use of a new spark plug, but after a couple of hundred miles of operation, the same skip is back in the engine. People have gone so far as

to grind valves, install new distributor points and completely overhauled carburetors when the only thing necessary to eliminate the trouble was the separation of the ignition cables.

We are carrying on extensive research toward the development of plugs which will give broader fouling ranges, together with the elimination of fuel deposit problems which are now crowding into the picture differently than when tetraethyl lead was first introduced. We believe that the time is not too far off when these

problems will be overcome, but until that time arrives, it will be necessary to clean and test our plugs more frequently so that we all can enjoy the pleasure of driving a car which will give us the driving comfort desired by everyone.

Messrs. Beaubier, Chalk, Roench

THE selection of a spark plug of the proper heat range for automotive service is becoming increasingly difficult in spite of the many improvements in design and materials that the spark plug manufacturers have made available. In automotive engines the combination of high-power potential with low-power demand in congested urban driving makes it difficult to provide a spark plug which minimizes electrode erosion and preignition problems, and gives maximum resistance to fouling. Present production spark plugs give satisfactory performance under most operating conditions, although difficulty may be experienced in light service.

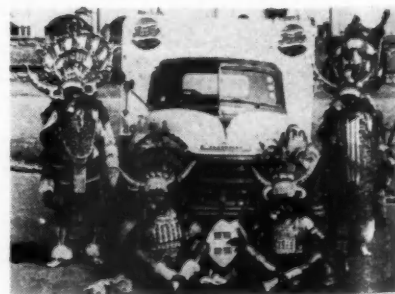
The spark-plug problem is not unlike many of the other problems associated with the operation of automotive engines. It is affected by the operating conditions, engine design, spark plug and ignition system design, lubricating oil, and the anti-knock compound in the gasoline.

Spark Plug Selection

IN the 14 mm spark-plug size each manufacturer has available a number of types of plugs ranging from approximately 100 to 215 IMEP for engines in passenger car and truck service. For any given operating condition the choice of the proper plug

(TURN TO PAGE 168, PLEASE)

Pepsi Goes Native



Zulu tribesmen in full ceremonial dress pose before one of the fleet of Pepsi-Cola trucks now in operation in Zulu-Land. The natives like the drink, like the bottle caps for bracelets, and created a bottle shortage by using the empties for musical instruments. The truck is a Chevrolet with a bottler's body: the place, Durban, South Africa

NOW IT'S EASY-
to order exactly the Joint you want
from the simplified Neapco Catalog!

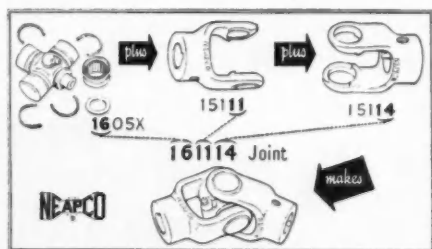


1500 Series
Plain Bearing

1600 Series
Needle Bearing

SIMPLIFIED NUMBERING SYSTEM

There is a Neapco size for nearly every light duty P.T.O. requirement. Ordering the right size is made easy because the number of the complete joint is simply a combination of the numbers of the three major components from which it is assembled. This allows you to make your own combination of length, bore, and type—quickly, accurately.



This diagram shows a typical joint combination—1605X journal assembly plus 15111 end yoke plus 15114 end yoke makes a 161114 Joint. It's that easy!

CATALOG: Not shown in this ad, but included in Catalog PT15B are unwelded center Assemblies and Rectangular Telescoping Center Assemblies. Copy of Catalog free if requested on your business letterhead. It's a valuable book!

NEAPCO POWER TAKE-OFF JOINTS
UNIVERSAL

NEAPCO PRODUCTS INC. · POTTSTOWN, PA.

"Our 350 units get rugged service..."

their fine performance wouldn't be possible except with

**Wagner
Air Brake
Systems"**

says R. A. Baensch, Executive Vice Pres.
DECATUR CARTAGE COMPANY

You, too, will find—if you equip the vehicles in your fleet with Wagner Air Brakes—maintenance is no problem. Reason—they require less maintenance than ordinary air brakes because of such engineering achievements as the Wagner Rotary Air Compressor, and the Wagner Power Cluster. Then, too, when maintenance becomes necessary, it can be quickly and economically handled because the compressor is of such simple design.

It will pay you to investigate the many advantages of Wagner Air Brakes. Equip your present vehicles with Wagner Air Brakes, and when ordering new equipment specify WAGNER. Coupon below will bring you Catalog KU-201. It gives complete information.

users are
our biggest
boosters

MODERN EQUIPMENT • DEPENDABLE • BONDED

DECATUR CARTAGE COMPANY
Chicago 16
TWENTIETH STREET AND WENTWORTH AVENUE

August 20, 1951

Wagner Electric Corporation
2411 S. South Park
Chicago, Illinois

Gentlemen:

I have just been complimenting our Maintenance Department on the fine performance of our tractors and they told me, very bluntly, that it was about time we complimented Wagner Electric Corporation on their Air Brakes. We haven't had a single case of road failure because of this equipment since we have been buying "Wagner"

The Rotary Air Compressor was the feature that originally sold us on trying your product and we have found these Brakes troublefree and requiring a minimum of maintenance.

Likewise, we have found your Air Brakes simple and easy to install. These features have influenced us to specify "Wagner" on any new additions to our fleet.

Our 350 units, as you well know, get rugged service and the fine performance of our trucks wouldn't be possible except with Wagner Air Brakes.

Yours very truly,

DECATUR CARTAGE COMPANY

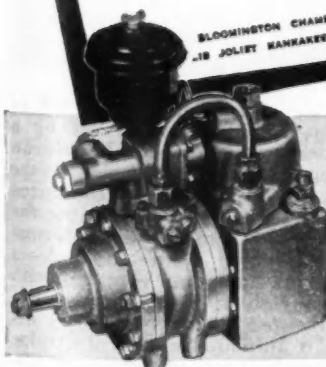
R. A. Baensch

R. A. Baensch
Executive Vice President

RAB:ST



BLOOMINGTON CHAMPAIGN CHICAGO CINCINNATI CLEVELAND COLUMBUS
JOLIET KANKAKEE MUNCIE OTTAWA PARIS PEORIA PORTIAC QUINCY



*used as original
equipment
by truck, tractor,
and bus
manufacturers*

**Wagner Products Serve the
Automotive and Electrical Industries**

LOCKHEED HYDRAULIC BRAKE PARTS and FLUID
NoRoL . . CoMax BRAKE LINING . . AIR BRAKES . . TACHOGRAPHS
ELECTRIC MOTORS . . TRANSFORMERS . . INDUSTRIAL BRAKES

Wagner Electric Corporation

6470 PLYMOUTH AVE., ST. LOUIS 14, MO., U. S. A.
(Branches in principal cities in U. S. and in Canada)

NAME _____

COMPANY _____

ADDRESS _____

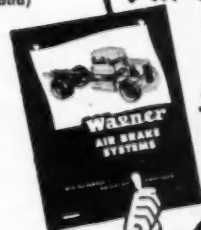
CITY _____ STATE _____

We operate _____ Vehicles
(NUMBER)

K52-1

GET YOUR COPY
OF THE NEW
**Wagner
Air Brake**

DESCRIPTIVE
CATALOG
NOW!



COMMERCIAL CAR JOURNAL, April, 1952

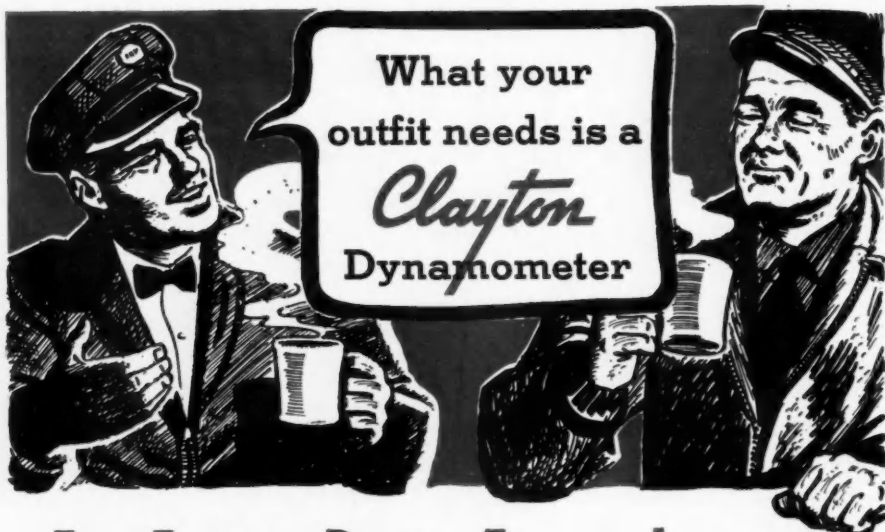
Spark Plug Problems

Continued from Page 166

is not too great a problem. However, when an engine operates over its entire range of speeds and loads, the choice must be a compromise. The requirements for maximum power without preignition positively forbids the choice of too hot a plug (at the low end of the IMEP scale). The choice of too cold a plug can result

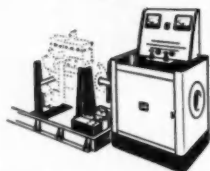
in fouled plugs after prolonged periods at low-load values. Since the fouling trouble associated with a plug being too cold is considered a lesser hazard than preignition from a plug that is too hot, there is a tendency to equip engines for passenger cars with a plug which is too cold for normal service. This is particularly true in the case of new engines that have just been put into production based on a background of high-speed dynamometer and road testing.

In the field there is natural reluctance to depart from the factory recommended spark-plug model and make. It is common practice to recommend a plug of one heat range for engines in truck application and one of a lower IMEP rating for the same engine installed in a passenger car. The need for such a distinction is generally accepted, but the need for a distinction between the different levels of service in passenger car applications is not as well recognized. Spark-plug manufacturers have carried out extensive educational programs to promote the selection of replacement plugs to fit individual service requirements, but a portion of the driving public still uses a plug which is not suitable for certain driving conditions. Service personnel in the field should be able to tell readily if a spark plug is unnecessarily hot, since the telltale erosion of the electrodes is easy to detect. It is much more difficult to determine the need for a hotter plug from the appearance of a removed set of spark plugs. To minimize fouling in passenger-car operation, the manufacturer can contribute by basing his plug selection to a greater extent on service in light-load operation, and by further training of his service department to correct for unusual operating conditions.



For Faster Runs; Fewer Lay-ups

Payload hours on the road make profits. Only with the Clayton Dynamometer can you insure peak performance through proper adjustment and inspection of fleet units operating under actual road driving conditions in your shop. Mail the coupon to learn how and why, year after year, winners of fleet maintenance awards are those operators who use the Clayton Chassis Dynamometer.



Clayton engine dynamometers allow engine run-ins before remounting in vehicle.



MAIL THIS COUPON FOR THE FULL STORY

NAME _____

FIRM _____

ADDRESS _____ CITY _____ STATE _____

CCJ-4

CLAYTON MFG. CO.
BOX 550, EL MONTE, CALIF.

Send us the complete story on modern truck fleet maintenance.

Trailer Classroom



A portable classroom was carried in this drop-frame trailer drawn by a Mack tractor which visited LeTorneau equipment distributors throughout the northwest. Four instructors conducted a four-day service school bringing the sales field staff late product information. Each school was set up indoors in a portable classroom complete with fluorescent lights. The instruction material consisted of cutaways and exhibits. An animated electrical display board was designed to teach the circuits and other aspects of the wiring system used on electric controlled LeTorneau equipment. The visual aids included motion pictures and slides capable of being shown in daylight without darkening the room.



SEE

Your Mileage Increase with

VEEDOL 90 H.D.

YOU'LL be wide-eyed when you see for yourself just how VEEDOL 90 H. D. ups your trouble-free mileage between major overhauls and cuts down overall bus and truck operating expense. That's because VEEDOL 90 H. D., with its high-detergent action, protects motors better against heat and wear.

VEEDOL 90 H. D. is made from 100% Pennsylvania crude, plus scientifically selected additives. VEEDOL 90 H. D.'s superior detergent properties, plus heavy-duty performance, reduce sludge

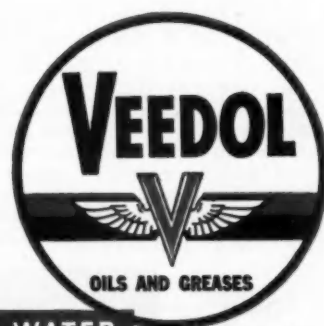
and gummy formations in motors, protect bearings from corrosion and minimize lacquering of pistons and valve stems. All this protection is given motors ...even under *continuous full-throttle operation!*

So, see for yourself that operating costs take a plunge when you've specified VEEDOL 90 H. D. for your fleet.

**CLEANS AS
YOU DRIVE!**



**TIDE WATER
ASSOCIATED
OIL COMPANY**



17 Battery Place, New York 4, N. Y. • Thompson Building, Tulsa 2, Oklahoma • 79 New Montgomery Street, San Francisco 20, Calif.

COMMERCIAL CAR JOURNAL, April, 1952

169

Eaton Front and Rear Axle

PARTS	SPECIFIED FIT OF CLEARANCE	SERVICEABLE AFTER WEAR
Gear mesh, bevels—backlash.....	.008 to .015	.018
Herringbone mesh—backlash.....	.010	.015
Gear mesh—differential backlash.....	.010 max.	.015
Bearing fit—cones where free—Pinion End.....	.001 loose to .005 tight	Loose—.002
Bearing fit—cones where free—Housing Tube.....	.0002 to .0017 loose	Loose—.002
Bearing fit—cones where free—Front Axle inner wheel bearing.....	.0005 to .0015 loose	Loose—.002
Bearing fit—cones where free—Front Axle outer wheel bearing.....	.0005 to .002 loose	Loose—.003
Bearing fit—cups where free—Diff. Brgs. L.H. and R.H. Side.....	.005 tight to .0015 loose	.002
Differential side pinion and spider.....	.002 to .004 loose	.006
Side gear in differential case.....	.004 to .007 loose	.006
Internal gear idler pinion and pins.....	.0045 to .0065 loose	.009
King pin fit in I-beam.....	.000 to .0015 loose	.001
King pin fit in Knuckle bushings.....	.0005 to .002 loose	Loose—.003
Differential washers back of gear.....	.002 loose to .006 loose	Loose—.010

TIRE HEAT PROBLEM?*Insure Airtight Tire Valves***USE....**

HI-TEMP *Heat Resisting*
VALVE INSIDES AND CAPS
 Developed by **DILL**

No. 100-AH
 Valve inside with special heat-resisting rubber in cup and on barrel.



No. 632

Dome-type cap with swivel gasket of special heat-resisting rubber.



No. 631

Hexagon-type cap with lead gasket mounted over brass sleeve.

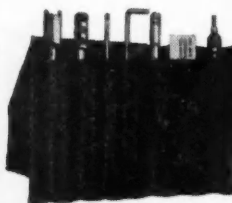


Stop costly road delays caused by tire trouble. Under abnormal hot tire temperatures, even up to 300°F and more, Dill HI-TEMP valve insides and caps keep tire valves airtight. High temperatures will not injure the special Dill heat-resisting air seal. Dill HI-TEMPS are helping fleet owners, everywhere, to maintain schedules and save tire wear. Be sure to get this money-saving equipment, today, from your wholesaler, tire or oil company.

THE DILL MANUFACTURING COMPANY
 700 East 82nd St., Cleveland 3, Ohio

HANDY SERVICE TOOLS FOR TRUCK AND BUS TIRES

This handy kit of long-handled tools will save time for your tire serviceman. Each tool is specially designed (approx. 8½" long) to reach inner dual tires for removing and replacing valve insides and making necessary repairs on valve stems. The complete set comes in a leather pouch with snap button lock, and fits handily in pants, coat or jacket pocket.



No. 5200 TOOL SET in Handy Leather Pouch Includes These Tools

No. 5201 Valve Inside Insert and Extractor
 No. 5202 Valve Cap Tool
 No. 5203 Valve Inside "Easy-Out"
 No. 5204 Valve Stem Refacer
 No. 5205 Valve Stem Seat Cleaner
 No. 5206 Valve Stem Rethreader

ORDER
 from your
 Wholesaler,
 Tire or Oil
 Company

DILL*Standard of the Tire Industry***TIRE VALVES AND ACCESSORIES****CLUTCH Spicer Brown-Lipe****Pressure Plate**

Maximum free movement in driving slots—.015
 Maximum fulcrum wear—1/32
 Maximum depth of scores which permit salvage by regrinding—1/16
 Maximum depth of scores permitting reinstallation without grinding—.005
 Maximum out-of-flat permissible without regrinding—.007

Lever

To be scrapped if contact areas are pitted or grooved

Release Sleeve

To be scrapped if total wear levers contact is over—1/32
 Clearance between bushing and shaft—maximum—.001

Spring

Per cent load loss permissible before scraping—20 per cent

Driven Plate

Replace if oil or grease on surface
 Replace when worn to rivet beads
 Replace if burned.
 Maximum play in disk splines measured at periphery—1/8
 If excessive spline wear occurs, check alignment between transmission and engine
 Maximum free play at periphery due to damper parts—1/16
 (Scrap disk if more)
 Permissible warpage:
 (Use indicator) face runout—.010

Cover (Flywheel Ring)

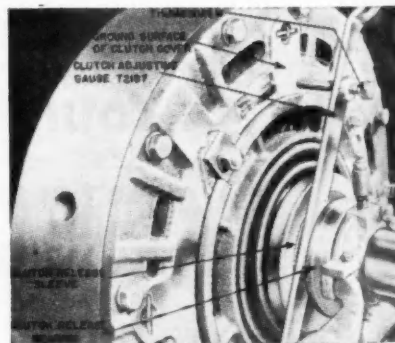
Maximum total freedom of pressure plate in slots—.015

Release Bearing

Grease—High Temperature—B. & RB.
 Adjustment—by turning castellated adjusting ring to correct free pedal travel

Clutch Release Shaft

Maximum play in bushings—.015

Lipe Rollway

Model Number	Inch Size	Dimension "A"	Quan. of Shims	Fly-wheel Depth	Facing Thickness
120-1-314	12	1"	6	1.920"	.015"
140-1-089	14	1 1/8"	8	1.312"	.015"
130-1-117	13	1 1/8"	8	1.500"	.015"
140-1-116	14	1 1/8"	8	1.312"	.015"
130-1-320 (1)	13	1 1/8"	6	1.843"	.015"
140-1-308	14	1 1/8"	6	1.812"	.015"
140-1-293	14	1 1/8"	6	1.812"	.015"
150-1-339	15	1 3/8"	6	1.812"	.015"
150-1-316 (2)	15	1 3/8"	6	1.812"	.015"
120-1-340	12	1 1/8"	4	1.875"	.015"
130-1-029	13	2 1/8"	6	1.843"	.015"
150-2-330	13-2	1 1/8"	8	2.937"	.015"
150-2-322	15-2	1 1/8"	8	2.937"	.015"
150-1-193 (2)	15	1 1/8"	7	1.812"	.015"
150-1-317	15	1 1/8"	7	1.812"	.015"
150-1-295 (2)	15	1 1/8"	7	1.812"	.015"
150-1-316 (2)	15	1 1/8"	7	1.812"	.015"
120-1-314	12	1"	6	1.920"	.015"
130-1-117	13	1 1/8"	8	1.500"	.015"
130-1-307	13	1"	6	1.812"	.015"
140-2-327	14-2	1 1/8"	8	2.937"	.015"
140-2-328	14-2	1 1/8"	8	2.937"	.015"

*—This dimension has a tolerance of $\pm \frac{1}{16}$ " and ± 0 ".

(1)—With 6 bolt holes.
 (2)—With 12 bolt holes.

► For over 15 years... in all types of diesel and gasoline engines in rugged, heavy-duty service... Sinclair TENOL® has been doing an outstanding job. TENOL has proven it provides long periods of trouble-free operation at sustained high power output, with lowered upkeep costs.

Sinclair TENOL is not to be compared with many alleged "heavy-duty" oils. TENOL is the real thing! You can easily tell if an oil is actually "heavy-duty"... See if it is approved under new Military Specification MIL-O-2104. TENOL far surpasses this stringent Government standard!

Save your valuable equipment—phone your nearest Sinclair Representative or write direct to Sinclair Refining Company, 600 Fifth Ave., New York 20, N. Y.



SINCLAIR TENOL

prolongs engine life

FAN BELT SPECIFICATIONS for Trucks

TRUCKS

Vehicle Make and Model	Engine Make or Model	Circumference (In.)	Width (In.)	Angle of "V" (Deg.)
Autocar				
*C-70	.....	60 1/2	3 1/2	42
U-70	.....	60 1/2	3 1/2	45
*C-90	.....	60 1/2	3 1/2	42
U-90	.....	60 1/2	3 1/2	45
C-8044	.....	54	3 1/2	42
Brockway				
.....	38B	54 1/2	3 1/2	42
.....	40B	54 1/2	3 1/2	42
.....	42BX	56 1/2	3 1/2	38

Vehicle Make and Model	Engine Make or Model	Circumference (In.)	Width (In.)	Angle of "V" (Deg.)
Brockway—Continued				
.....	46B	65 1/2	3 1/2	38
.....	48B	65 1/2	3 1/2	38
Brown				
.....	Cont R6572	68 3/4	1 1/2	45
.....	Cum HRB8	41 1/8	1 1/8	45
.....	Cum NHB	41 1/8	1 1/8	45
.....	Buda 6DA779	73 3/8	3 1/8	45
.....	Buda 6DA884	73 3/8	3 1/8	45
Chevrolet				
.....	All	42 3/8	1 1/2 max	±
Coleman				
.....	Buda L.O. 525	±	.....	.....

Vehicle Make and Model	Engine Make or Model	Circumference (In.)	Width (In.)	Angle of "V" (Deg.)
Corbitt				
G101	Cont M6330	54 1/4	3 1/4	36
G301	Cont B6371	55 3/8	1 3/4	42
G302	Cont B6427	57 1/2	3 1/4	38
G402	Cont T6427	57 1/2	3 1/4	38
G601	Cont R6513	68 1/2	3 1/2	38
G602	Cont R6572	68 1/2	3 1/2	38
G603	Cont R6802	66 1/4	3 1/8	38
D202	Her DJKH	49 1/4	.960	50
D401	Her DWXD	65 3/8	.960	44
D402	Her DWXD	65 3/8	.960	44
D404	Cum JBS600	51 1/2	.406	38
D801	Her DRKC	51 1/4	.438	44
D801	Cum HRB600	41 3/8	.438	42
D802	Cum HRB600	41 3/8	.438	42
D803	Cum NHB600	41 3/8	.438	42
D806	Cum HRB600	41 3/8	.438	42



MAKE "Short Work" OF REPAIRS
and SERVICING with

HYPRESSURE Jenny STEAM CLEANER

By Hypressure Jenny steam cleaning before repairs, you can shorten vehicle lay-up time as much as 40%—the amount of time which national time studies show is lost on jobs where high-priced mechanics must fight grease and dirt with outmoded scrapers, brushes, solvents, etc!

You can clean chassis and engines for service and repair, or prepare bodies for repainting, in one-tenth the time required by hand methods; and cleaning is so thorough that cracked or worn parts show up for correction before costly failures occur. In fact, Jenny has so many time and money-saving uses around a fleet service shop, that it's a "must" for economical fleet maintenance.

Find out how Jenny can help to keep your fleet "on the go." Write for booklet, "1001 Ways to Extra Profit with Hypressure Jenny." There's no obligation; so why not do it now?



HYPRESSURE JENNY DIVISION

Homestead Valve
Manufacturing Company
"Serving Since 1892"

P. O. Box 90

Coraopolis, Pa.

Crosley				
CD-B	.....	.719	34	
CD-E	.....	.719	34	
Diamond-T				
222	.....	47	3 1/2	40
322	.....	47	3 1/2	40
404SC	.....	50	3 1/2	40
420	.....	46	3 1/2	41
509C	.....	53 3/8	3 1/2	40
509SC	.....	46	3 1/2	40
520 (Hyd. Br.)	.....	46	3 1/2	44
520 (Air Br.)	.....	46	3 1/2	46
614C	.....	53	3 1/2	40
614SC	.....	46	3 1/2	40
620	.....	See 520	3 1/2	40
660	.....	57	3 1/2	40
720	.....	57	3 1/2	40
722	.....	53	3 1/2	40
920	.....	67	3 1/2	40
921	.....	.....	.....	.....
921R	.....	.....	.....	.....
Duplex				
TH	.....	54 1/2	3 1/2	38
TH339	.....	62 1/8	3 1/2	38
RH	.....	55	3 1/2	38
JH	.....	53 1/4	3 1/2	42
KH	.....	53 1/4	3 1/2	42
LH	.....	53 1/4	3 1/2	42
GR6	.....	55	3 1/2	38
Ford				
EAG	.....	38	3 1/2	38
8M	.....	42 1/2	3 1/2	38
8R	.....	36	3 1/2	38
EAL	.....	42	3 1/2	38
EAM	.....	42	3 1/2	38
(Generator and Water Pump)				
EAG	.....	36	3 1/2	38
8R	.....	56 1/8	3 1/2	28
EAL	.....	44 1/2	3 1/2	38
EAM	.....	44 1/2	3 1/2	38
Linn				
.....	JXE3	34 1/4	3 1/2	40
.....	JXC	44 1/4	3 1/2	40
Marmon-Herrington				
DVL-4	.....	82.7	1 1/2	40
LD7-4	Ford	.....	.....	.....
R32, R4	Ford	.....	.....	.....
R5, R6	Ford	.....	.....	.....
V5, V6	Ford	.....	.....	.....
Q5, Q6	Ford	.....	.....	.....
Rao				
F20	.....	54	3 1/2	38
F21	.....	54	3 1/2	38
F22	.....	54	3 1/2	38
F22R	.....	54	3 1/2	38
F22S	.....	54	3 1/2	38
F23	.....	54	3 1/2	38
F228	.....	54	3 1/2	38
F238	.....	.....	.....	.....
Studebaker				
2R5	.....	38	40-44	40-44
2R10	.....	38	40-44	40-44
2R15	.....	38	40-44	40-44
2R6	.....	42	40-42	40-42
2R11	.....	42	40-42	40-42
2R14	.....	42	40-42	40-42
2R16A	.....	42	40-42	40-42
2R16B	.....	42	40-42	40-42
2R17A	.....	42	40-42	40-42
2R17B	.....	42	40-42	40-42
White				
1130	.....	39 3/4	3 1/2	42
1140	.....	39 3/4	3 1/2	42
1144	.....	39 3/4	3 1/2	42
White-Freightliner				
WF64	Cum NHB603	.....	.....	.....
WF42	Cum NHB600	.....	.....	.....

Fleet Passenger Cars and Buses

Supplying Circumference,
Width and Angle of "V"

Vehicle Make and Model	Engine Make or Model	Circumference (In.)	Width (In.)	Angle of "V" (Deg.)
Willys All Models..	43.8-44.4	33	38-43

Vehicle Make and Model	Engine Make or Model	Circumference (In.)	Width (In.)	Angle of "V" (Deg.)
Southern				
F31M.....	46.125	.825	46
F31H.....	46.125	.825	46
F35M.....	46.125	.825	46
F35H.....	46.125	.825	46
S36M.....	46.125	.825	46
S36H.....	46.125	.825	46
S41M.....	46.125	.825	46
S41H.....	46.125	.825	46
S45M.....	46.125	.825	46

Vehicle Make and Model	Engine Make or Model	Circumference (In.)	Width (In.)	Angle of "V" (Deg.)
Southern (cont'd)				
S45H.....	46.125	.825	46
Transit				
*O1.....	63 $\frac{1}{2}$	$\frac{5}{8}$	38
(Alternator).....	38 $\frac{1}{2}$	$\frac{5}{8}$	34
White				
1138.....	39 $\frac{1}{2}$	$\frac{5}{8}$	42
1140.....	39 $\frac{1}{2}$	$\frac{5}{8}$	42
1144.....	39 $\frac{1}{2}$	$\frac{5}{8}$	42

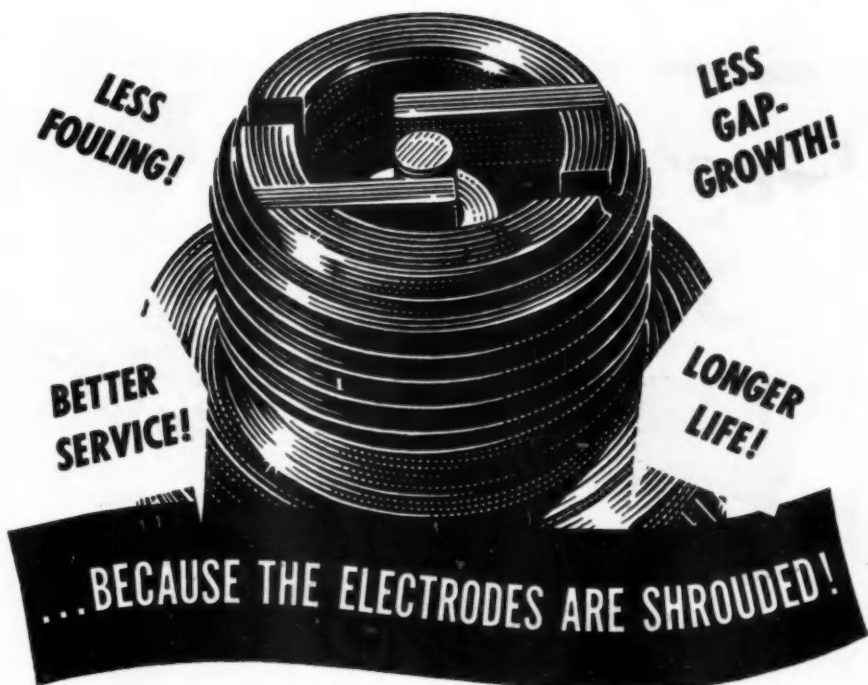
PASSENGER CARS

Vehicle Make and Model	Engine Make or Model	Circumference (In.)	Width (In.)	Angle of "V" (Deg.)
Chevrolet				
1500.....	....	42 $\frac{1}{2}$	$\frac{1}{2}$	35
2100.....	....	42 $\frac{1}{2}$	$\frac{1}{2}$	35
Dodge				
6.....	D41	49	$\frac{3}{8}$	36
6.....	D42	49	$\frac{3}{8}$	36
Ford				
6.....	1HA	41 $\frac{1}{2}$	$\frac{3}{8}$	40
V8.....	1BA	41 $\frac{1}{2}$	$\frac{3}{8}$	38
Plymouth				
6.....	P22	49	$\frac{3}{8}$	36
6.....	P23	49	$\frac{3}{8}$	36
Studebaker				
6.....	12G	40 $\frac{1}{2}$	$\frac{1}{2}$	44

BUSES

Vehicle Make and Model	Engine Make or Model	Circumference (In.)	Width (In.)	Angle of "V" (Deg.)
ACF-Grill				
C44.....	HS 180-3	40 right 48 $\frac{1}{2}$ left	$\frac{3}{4}$	38
C44.....	HS 190-3	40 right 48 $\frac{1}{2}$ left	$\frac{3}{4}$	38
C48.....	HS 190-3	40 right 48 $\frac{1}{2}$ left	$\frac{3}{4}$	38
IC-41A.....	HS 190-5	41 $\frac{1}{2}$ right 44 $\frac{1}{2}$ left	$\frac{3}{4}$	42
C27.....	IHC RD-372	58 $\frac{1}{2}$	$\frac{1}{2}$	40
C31.....	IHC RD-406	58 $\frac{1}{2}$	$\frac{1}{2}$	40
C31.....	IHC RD-450	58 $\frac{1}{2}$	$\frac{1}{2}$	40
SU37.....	IHC RD-450	58 $\frac{1}{2}$	$\frac{1}{2}$	40
Aercoach				
373MC.....	....	55 $\frac{1}{2}$	1 $\frac{1}{2}$	40
373MH.....	....	50 $\frac{1}{2}$	$\frac{1}{2}$	42
373MD.....	....	55 $\frac{1}{2}$	1	42
Baer				
IHC.....	....	....	$\frac{3}{8}$	38
Beck				
Silverliner..	....	67 $\frac{1}{2}$	$\frac{3}{8}$	42
28.....	....	67 $\frac{1}{2}$	$\frac{3}{8}$	42
Mainliner..	....	66	$\frac{3}{8}$	46
Fitzjohn				
310 Cityliner	Her JXLD	56	.938	44
FTG Cityl'r	Her JXLD	56	.938	44
FTG Cityl'r	Her WXLD	66 $\frac{1}{2}$	$\frac{1}{2}$	32
FTD Cityl'r	Her DWXLD	66 $\frac{1}{2}$	$\frac{1}{2}$	32
910 Duraliner	Her JXLD	56	.938	44
838 Sup. Dur.	Wau 140GK	65 $\frac{1}{2}$	1 $\frac{1}{8}$	46
Flexible				
*218B1-52..	....	60 $\frac{1}{2}$	$\frac{3}{8}$	40
Harmon-Herrington				
8MB-18732-A (Air	compressor)	40 $\frac{1}{2}$	$\frac{1}{2}$	36
8MB-8820A1 & 2.....	....	47 $\frac{1}{2}$	$\frac{3}{8}$	32

- *Fan and generator.
- Water pump and compressor.
- Matched pair.
- 30-32 deg cut molded or 34-36 deg wrapped molded.
- Gates No. 120T. Two required.



You'll save money with Hastings Aero-type Spark Plugs. The electrodes are *shrouded*—completely protected from the hot flame sweep. And there are *two* ground electrodes—to give you at least twice the life. So you can use a hotter plug

to overcome fouling conditions, and still reduce electrode erosion!

Hastings gives you other important features, too: an H. T. aluminum oxide insulator; a solid copper, non-loosening gasket; a wider gap setting. Each and every plug is X-ray inspected for proper construction and heat flow. Each is Performance Rated.

Write Dept. C for illustrated catalog. Spark Plug Division, Hastings Manufacturing Co., Hastings, Michigan. Makers of Spark Plugs, Piston Rings, Oil Filters, Casite, Drouit.



THE DOUBLE-DUTY SPARK PLUG FOR HEAVY DUTY USE

A Worm's-Eye View Of the Highway Muddle

A new approach to the nation's highway problem, excerpted from a speech given before a meeting of the Michigan Trucking Association

By

Verne Drew

Director of Research
Fruehauf Trailer Co.



Verne Drew

IN OFFERING a solution to the acute highway problem confronting the nation, Verne Drew, Fruehauf's director of research had some important suggestions to offer. Quoted in part, he presented a "worm's-eye" rather than a "bird's-eye" view of the situation, believing that a down-to-earth consideration, analysis, and solution to the problem was the only practical method of approach. He said:

"Such a problem must be approached from a realistic point of view. If more and better roads are required by everybody for every purpose, it is only fair that we take some immediate steps to insure that everyone shares his proportionate part of the cost. The whole problem can be boiled down to about four simple questions.

"In the interest of simplicity I would list them as follows: 1. What kind of roads do we need to build? 2. Just where and to what extent do we need them? 3. What will they cost? 4. Against whom and in what proportion must the cost be assessed?

"If, the (highway extension) program is to be an all-embracing and truly economic asset, it must be developed for all highway users indiscriminately. The burden of cost must be proportionately distributed among all beneficiaries.

"In developing a simple answer to the question—"What kind of highways shall we build?" the two simplest forms of classification would seem to be: first, the type or nature of the highway, and second, its capacity.

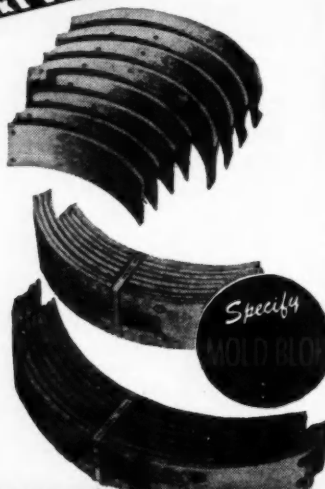
"We should find no major disagreement over the type of highways we need, for it would seem only good business and sound economy in new construction to minimize our grades and radii of curvature and maximize our sight distances and safe speeds of travel, for in everybody's business, or pleasure, time is money, every hour of the day, and every day of the year,
(TURN TO PAGE 178, PLEASE)

TESTING FOR YOU



Day and night operation of our testing unit assures you of a product that will do your job. Mold-Blok is tested on the hills of Pennsylvania in all kinds of weather—in this way our engineers know just what you need.

Specify Mold-Blok for new outfits or when re-lining older ones. It's a product you can depend upon.



MOLDED MATERIALS DIVISION

OF

CARLISLE CORPORATION

RIDGWAY, PA.

SERVICE is DUCK SOUP ON



KYSOR

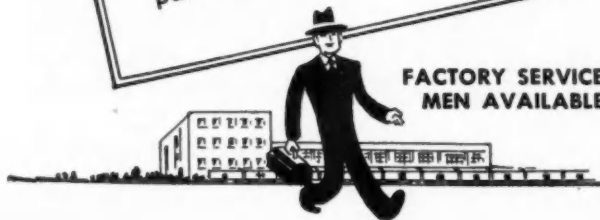
"Built to last"
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FACTORY PARTS EXCHANGE PLAN

KYSOR maintains a rapid-service parts exchange department for customer convenience and savings. Exchange Plan includes Shutterstats, Alarmstats, Pressurestats, Filters, Air Cylinders, Vacuum and Hydraulic Controls.

Write KYSOR, Cadillac, Michigan, giving parts serial numbers for parts exchange information.

FACTORY SERVICE
MEN AVAILABLE



Sturdy construction and finest craftsmanship make KYSOR Equipment easy on maintenance and simple to service.

Complete service instructions are available in KYSOR Service Bulletins such as those illustrated. Authorized KYSOR Distributors are also equipped to service all types of KYSOR SHUTTERS and Controls.

Please enclose shutter serial number when requesting service material or replacement parts.

KYSOR HEATER CO. - Cadillac, Mich.

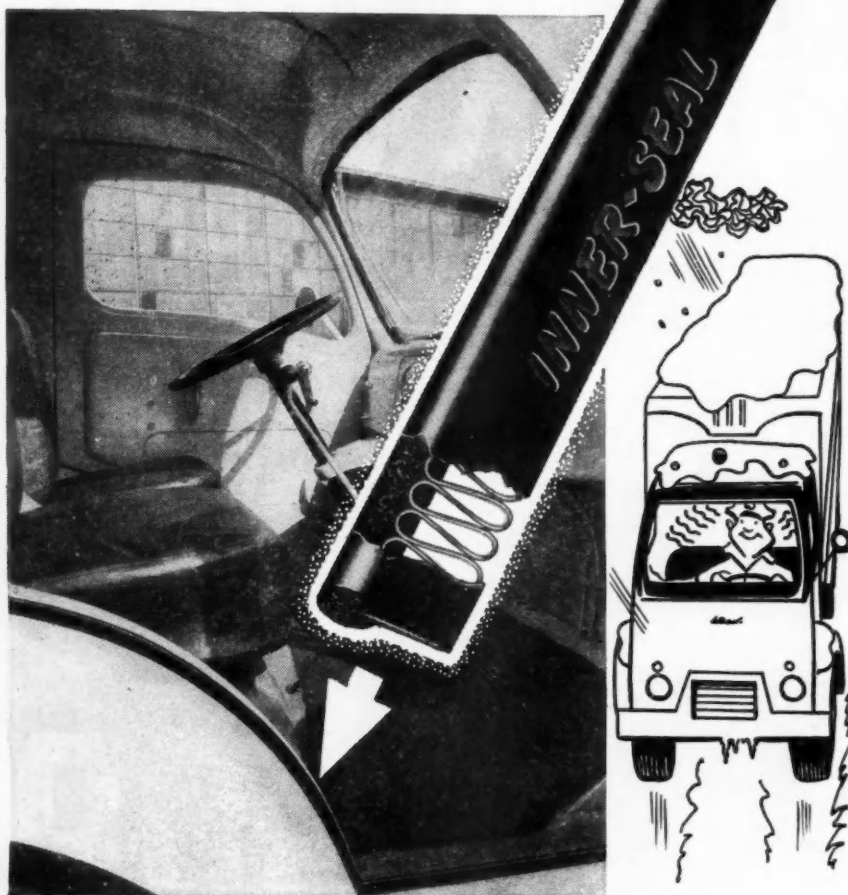
Check service information desired, clip to your letterhead and mail to KYSOR Heater Company, Cadillac, Mich. Service information will be promptly forwarded to you.

Air Control Shutters ☐ Vacuum Control Shutters ☐

Hydraulic Control Shutters ☐ Parts Exchange Plan ☐

For Shutter Parts List and Serial No. _____

Strip this in for warmer, drier truck cabs



That little strip of INNER-SEAL does a lot of work.

It keeps out wind and weather—silences slamming and vibrational noises—keeps bouncing back into shape to form a tight, water-resistant seal.

That is why it is used along the door moldings on all 3000 series model truck cabs made by White Motor Company.

Look at INNER-SEAL's unique construction and you can see how it differs from ordinary weatherstripping.

Its base is live sponge rubber. That is the reason it compresses . . . seals tighter, bounces back to shape. Never cracks like hollow strips. Does not mat.

The woven spring-wire flange is so flexible it fits around corners like a glove.

The waterproof neoprene coating resists sub-zero or tropic temperatures, grease, oil, sunlight, and abrasion.

FREE samples . . . data on sizes, shapes, colors, scores of uses in the automotive and refrigeration fields.

STROBOSCOPE OF "JUMP TEST" PROVES INNER-SEAL SEALS TIGHTER, LASTS LONGER!

Springy live rubber is the reason. Action-stopping stroboscopic photos prove it. Both ends of a strip were pressed together, then released . . . resulting in the lively spring action you see.



INNER-SEAL

Live Rubber

WEATHERSTRIPPING

STAYS LIVELIER LONGER . . . SEALS TIGHTER

BRIDGEPORT FABRICS, INC., BRIDGEPORT 1, CONN.

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Highway Muddle

Continued from Page 176

and that holds true regardless of the type, size, nature or function of the vehicle.

"The question of types of roads is not particularly difficult. In fact, they could probably all be classified as either hard surface roads, gravel or equivalent roads, roads that are properly graded and drained, and other miscellaneous unimproved types.

New Capacity Basis

"WHILE there would probably be considerable disagreement over the relative mileages of each type that should be provided, the relative merits of the rigid versus the flexible types, and the selection of materials best suited to the required usages, these decisions ought not to present any particular problem if they are kept well beyond the reach of political considerations.

"It is when we begin to talk about the capacities of highways that confusion really develops, and in order to avoid complete misunderstanding we must definitely separate the matter of capacity into two distinct categories.

"The first should refer only to capacity from the standpoint of vehicular congestion, and the second to capacity from the standpoint of loads carried per vehicle, and, while somewhat related, these factors are actually distinctly different.

"Consider, if you will, the relative effects, trafficwise, of resolving one unit weighing 150,000 lb and requiring 50 ft of highway length, into 37 units of 4000 lb each which would measure 370 ft from end to end.

Fewer Vehicles—Bigger Loads

"IN EVERY consideration of highway needs, in which vehicular congestion is always a major factor, we must never overlook or lose sight of the inherent advantages of a lesser number of vehicles hauling greater loads over a greater number of vehicles hauling lesser loads. There can be no compromise with this basic principle.

"In this same connection, can anyone conscientiously deny that the presently popular bridge formula, or weight table, recommended by many (TURN TO PAGE 181, PLEASE)

COMMERCIAL CAR JOURNAL, April, 1952

Highway Muddle

Continued from Page 178

of our present state highway engineers, and equally as enthusiastically endorsed by our Bureau of Public Roads, is not actually a definite contribution to vehicular congestion in that it puts a premium on unused and unnecessary vehicle length?

"Could there be anything radical about insisting that our future roads should be fully adequate to utilize our currently available motive power, at least as far as commercial motor vehicles are concerned?

"The automotive industry is today producing, in sizable volume, power units in the 275 and 300-hp classifications. These vehicles have repeatedly demonstrated the practicability of handling 150,000 lb gross vehicle weight over modern roads with 3 per cent maximum grade, covering distances of as much as 300 miles in approximately 8 hours time. The future construction of either roads or bridges not fully adequate for the utilization of these 150,000-lb classifications of vehicles would be economically unsound and definitely not in the public interest.

"Now there are several ways in which one can obtain 150,000 lb gross vehicle weight, for a vehicle, like an insect, may have many or few supporting legs, or axles.

"For example, a series of eight 18,000-lb and one 6000-lb axles, or five 28,000-lb and one 10,000-lb axles, or numerous intermediate combinations, will all produce a total of 150,000 lb gross vehicle weight.

"If the magnitude of individual axle loads shall eventually be found to be the determining factor in the thickness of highway road surfaces, and there are many well-informed people today who, since the Maryland Road Tests, do not subscribe to that theory, then we have only to determine the axle load that would be most generally economical to use and there need be no further "dilly-dallying" insofar as highway carrying capacity is concerned.

... And Better Roads

"AND NOW, just a few observations, still 'worm's eye' type, on 'Where and to what extent do we need more and better roads?'

"The magnitude of present and fu-

ture demands for the movement of goods and services is the only realistic yardstick of measurement which can be properly used in determining highway needs in any locality. The most disheartening thing that I have heard in recent months was a statement along these lines—'How can we highway people be expected to know the highway needs of industry?'

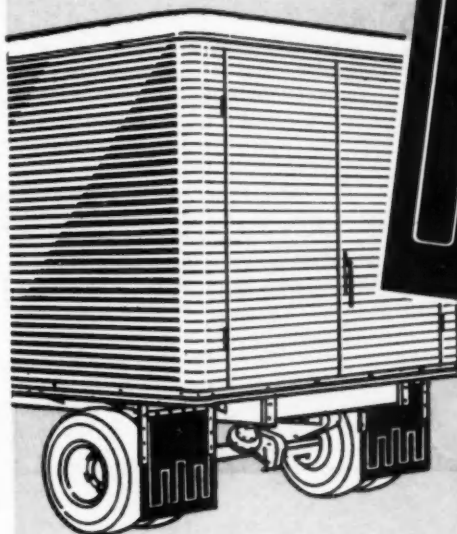
"If those words had come from Rip Van Winkle, I can assure you they would have drawn my deepest

sympathy; but, coming as they did from a top level official responsible for the administration of as much as \$100 million of highway funds in a single calendar year—well, what do you think? I have had some experience in various forms of research and if that is the missing link let's for goodness sake hold everything until we can search out the necessary fundamental facts. The quicker we do it the better.

(TURN TO PAGE 184, PLEASE)

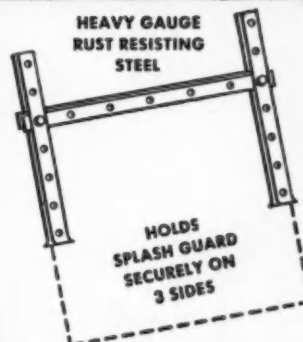
HEAVY DUTY RUBBER ARMOR-FLEX

Splash Guards



FOR TRUCKS
AND TRAILERS

SPLASH GUARD
UNIVERSAL
MOUNTING BRACKET



Complete unit—specially designed to mount splash guards. Adaptable to fit any model truck or trailer. Packed one pair per box

Designed to meet the most rigid road conditions. Built to withstand the abrasive action of mud, sand, stone and ice. Made of heavy-gauge molded rubber combined with woven fabric. A brass-plated steel bar imbedded into mounting-edge provides tear-proof grip for holding bolts. The Standard-Deluxe type is available in six sizes: 20" x 20", 20" x 24", 24" x 24", 24" x 30", 24" x 36" and 24" x 40". Pre-punched for easy mounting. Packed two per box.

Doan
MANUFACTURING CORP.
1761 LONDON ROAD • CLEVELAND 12, OHIO

FLEET OWNERS . . .

*You get 4 2
to keep'e*

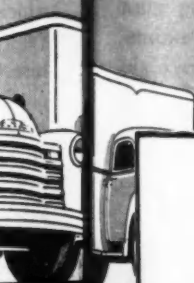


**For better, faster, surer fleet service . . .
be sure to deal with your Chevrolet Dealer**

He is ready, willing and able to serve you!

Big Helps b'em rolling

**when you deal with your
CHEVROLET DEALER!**

- 
- 1** A well balanced stock of genuine Chevrolet precision-built parts, *that*
 - 2** Help reduce fleet maintenance time and operation costs, *thus*
 - 3** Keep your vehicles on the highways; *plus*
 - 4** Expert help in solving your service problems.

**Your Chevrolet Dealer is
your partner in service!**

Highway Muddle

Continued from Page 181

About Highway Costs . . .

"It has been my observation for a considerable period of time that in every discussion of highway costs the contention is always advanced that heavy capacity highways are impractical and prohibitive because of the added expense involved in their construction.

"In acquiring the right of way for a new highway facility, would the cost of the land be in any way influenced by the load-carrying capacity of the highway which was to be constructed over the right of way purchased? The simple and direct answer would seem to be *no*.

"Having accepted the theory that a minimum percentage of grade and a maximum radius of curvature should be provided on any new facility, would not the cost of accomplishing these be identical regardless of

the carrying capacity of the highway to be built? The simple and direct answer would seem to be *yes*.

"Would there be any difference in either the drainage requirements or their costs as between a heavy and a light-capacity highway? The simple and direct answer would seem to be *no*.

"Would there be any appreciable difference between the design or the cost of a proper and adequate subgrade for either a heavy or a light-capacity highway? A simple and direct answer would seem to be *no*.

"Would a heavy-capacity highway require any more warning signals, stop lights, overpasses, underpasses, or other similar elements ordinarily provided for public safety and convenience than would be necessary on a light-capacity highway? Here, again, a simple and direct answer would seem to be *no*.

"The time is surely now at hand to take positive steps to put an end to the many evil practices of which diversion of funds to other than highway purposes and a general "blank check" highway policy are prime examples.

"In this matter of highway programming is the question: "Against whom and in what proportion must the costs of construction and maintenance of our present and future highways be assessed?"

(TURN TO PAGE 186, PLEASE)



TRAILERS

● TEC offers a complete line of Dump Units, for hauling coal, sand, gravel and other bulk materials. Also stakes, flats and every other type of trailer and semi-trailer, including vans and numerous special body styles.

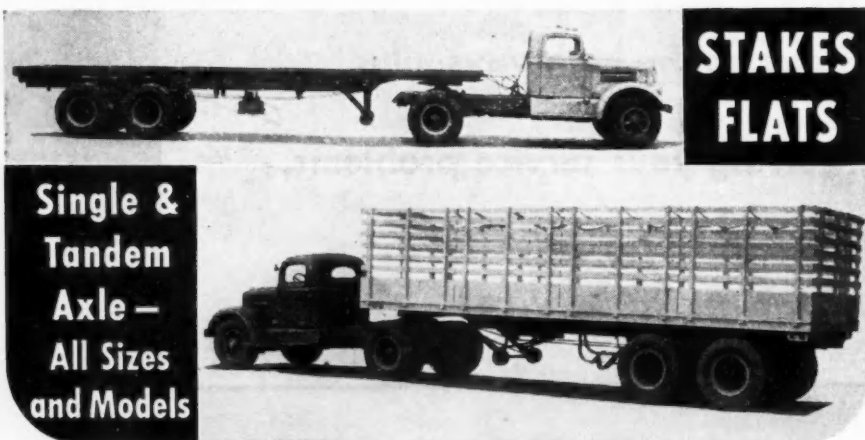
TEC engineers have long been leaders in the design of highly

efficient units, incorporating the most advanced features to meet every kind of hauling requirement.

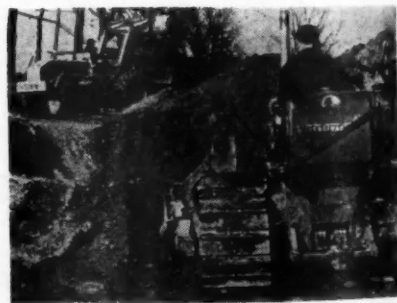
TEC trailers are widely recognized for excellence of design and construction, combining maximum pay load with long life and low maintenance. Catalog on request.

Some Distributor Territory Available

TRUCK ENGINEERING CORP., Cleveland 2, Ohio



Chrysler Proving Ground



The initial construction of a new proving ground and test area is under way at the Chrysler Corporation's 3800-acre tract near Chelsea, Mich. The bulldozer shown here slices into a gravel bank which will be used as fill for grading other sections of the road network. The design and specifications of the testing tracks and obstacle courses are being developed. There will be a central observation control tower, an oval high-speed track five miles long, a 10-mile endurance track, three differently-graded inclines and obstacle courses such as mud pits, sand pits, and a water trough



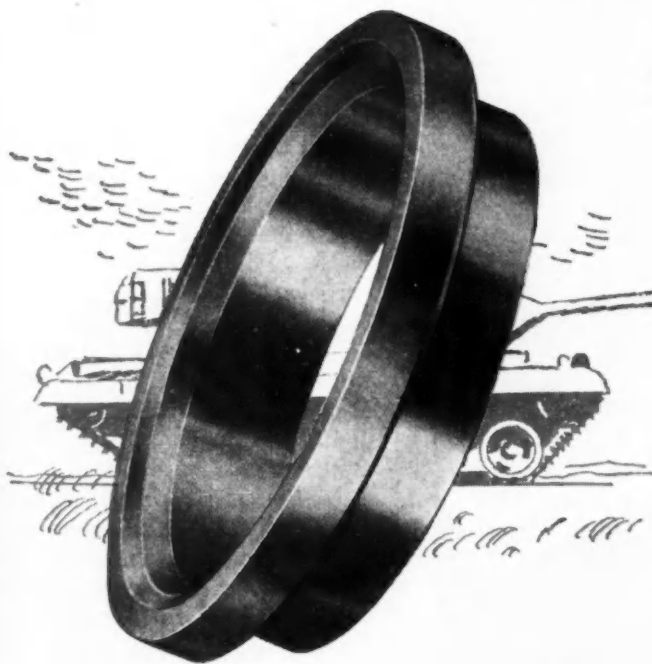
THE MASS PRODUCED motor vehicles of today require engine parts that assure maximum performance and dependability.

For fifty years Thompson Products has been making precision parts for cars, buses, trucks, tractors and industrial engines, both gasoline and diesel.

From cap screws in 1901, Thompson engineers have perfected such vital engine parts as valve seat inserts, whether for a Walker Bulldog Tank that is a vital link in our national defense, or one for the mass produced automobiles that are so essential to our way of living.

For engine performance you can take

for granted: *count on* Thompson



Along with valve seat inserts, Thompson's Special Products Division manufactures piston pins and cylinder sleeves—for the finest aircraft engines, heavy duty trucks and tractors, industrial engines as well as for passenger cars.

If you are having trouble with engine parts—if you need a better, more dependable supplier, just write or call Special Products Division, Thompson Products, Inc., 2196 Clarkwood, Cleveland 3, Ohio. You'll soon learn what car and plane makers have known for 50 years—you can count on Thompson.

Thompson Products, Inc.

**SPECIAL PRODUCTS
DIVISION**

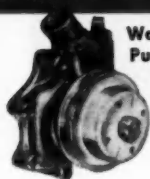
2196 Clarkwood Rd. • Cleveland 3, Ohio



Cylinder Sleeve



Industrial Pump



Water Pump



Piston Pin



Valve Seat Insert



U-Flex Piston Ring

Highway Muddle

Continued from Page 184

A Fair Tax

THE SIMPLEST, most economical, and most satisfactory way we have ever found to collect highway taxes is by the license fee and the fuel tax mediums.

"If we could but subscribe to the basic theory that a licensing fee in addition to establishing identifica-

tion, has a very definite relationship to the amount of space occupied by the vehicle at any one instant, we would of necessity begin to think about the magnitude of the facility, which can unquestionably best be evaluated in terms of length.

"For illustrative purposes, in 1945 the State of Illinois offered 1,700,000 licensed motor vehicle owners a facility of approximately 105,000 miles of rural roads and a highway budget of \$87½ million. It was further determined that the total maintenance

was approximately 12¾ million dollars. A survey further divided the 1,700,000 vehicles into groups whose individual lengths ranged from 10 to 45 ft., which was then the maximum legal length.

"Now—simple mathematics indicates that these 1,700,000 vehicles had a total simultaneous occupancy length of about 19½ million ft. So, 19½ million ft. divided into 12¾ millions simply means that the necessary revenue for maintenance purposes could have been raised by simply licensing each vehicle on a basis of 65 cents per foot of length, in which case a 10-ft. automobile would have paid \$6.50 for a license plate, and a 45-ft. combination \$29.95, with intermediate amounts for intermediate lengths.

"Now to raise the remaining \$34 billions not covered by the licensing fees would have required approximately a 3 cents per gallon gasoline tax, and so a combination of a 65 cents per foot of vehicle length licensing fee, and a 3 cents per gallon fuel tax would have fully met the budgetary requirements in that particular instance, and no other troublesome, uneconomic, unfair or unrealistic taxation would have been necessary.

"I think I can already hear a great tumult arising among those who seek an "escape route" through the use of a ton-mile taxing basis by contending that a fuel tax is unfair to light vehicles. For that group I have two pertinent questions: 1. How can anyone economically justify the use of a 100, 125 or 150-hp engine to whisk a maximum of five average people and their luggage, or a total of 1000 lbs., around the country, and at the same time expect a unit tax assessment even remotely equivalent to that applicable to the same engine in commercial transport service using perhaps four, or as much as five times as much fuel in hauling as much as 50 perhaps 60 times the equivalent tonnage of our nation's goods and services? 2. How can low mileage users expect to have all the advantages of our highway facilities on what virtually amounts to a stand-by basis at the same unit usage fee that might be enjoyed by those whose daily high mileage operations are of such material aid in maintaining an adequate and sustained tax revenue?



Heavy-duty steel case. Dust-proof.
Weather-tite. Side or bottom mounting.
Locking hasp.



You Know

BOLSER OIL FLARES

NOW SEE

GENUINE

BOLSER

REFLECTOR FLARES

The Bolser Reflector Flare has everything... Radiant locking device keeps flares at right angle for maximum reflection and greatest warning distance... Plastic lens permanently sealed into permanent position... Main chassis sprightly holds metal flag stand... Rust-resistant, electro-plated, heavy steel finish.

Available 3 flares with or without flag in carrying case—or single units only. See your jobber.

THE BOLSER CORPORATION

Cedar Falls, Iowa



1. PUSH



2. LIFT



3. LOCK

EASY AS

1. 2. 3

TO SET UP
OR
TAKE DOWN

**MEETS I.C.C.
AND STATE
REGULATIONS**

FOR Safety's SAKE

only Bower

GIVES YOU THESE

3 *distinct advantages*

COVERAGE—both tapered and straight roller bearings in one line . . . the *Bower* line!

QUALITY—famous Spher-O-Honed tapered roller bearings; straight roller bearings held to finest limits of run-out tolerance . . . *Bower* quality!

AVAILABILITY—through Federal-Mogul jobbers everywhere. And *they* are backed by 74 Federal-Mogul Service branch stocks throughout the United States and Canada . . . *Federal-Mogul* availability!

Bower and Federal-Mogul, two of the greatest names in the bearing industry, combine their efforts to provide you with a *better* roller bearing service. You get the kind of roller bearings you want—and you get them when you need them. You can depend on *Bower* and *Federal-Mogul*!

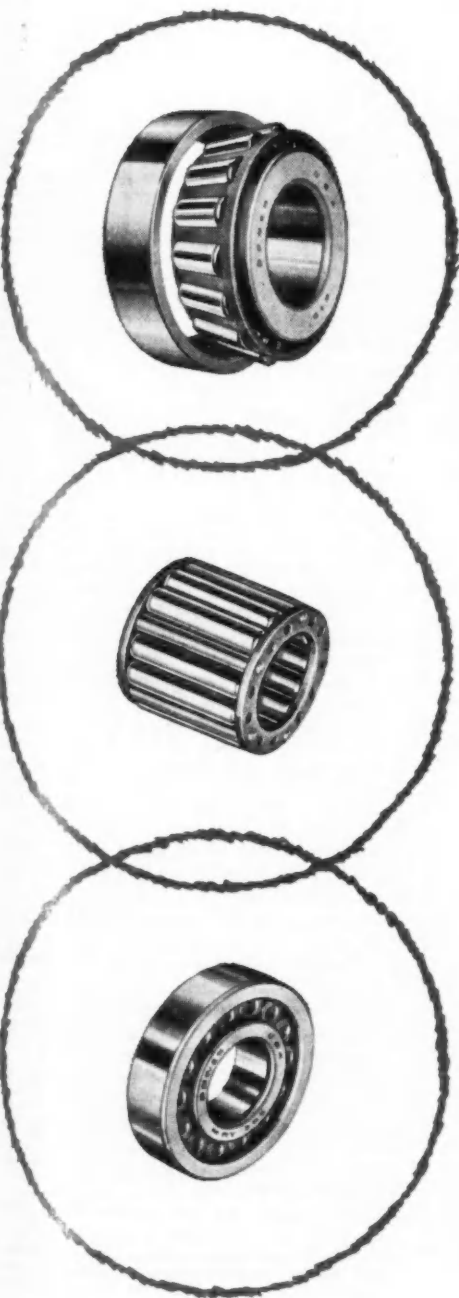


Ask Your Federal-Mogul Jobber!

FEDERAL - MOGUL SERVICE

(Division of Federal - Mogul Corporation)

DETROIT 13, MICHIGAN



State Fuel Taxes

Official state motor vehicle fuel tax rates, in cents per gallon for vehicles operating on highways are shown in the accompanying tables.

In some instances, these rates are lower within a state in certain zones or areas competing with a neighboring state having a lower tax rate. Also, some states have delegated to

municipalities, or other jurisdictions, the power to levy additional taxes. In those jurisdictions, the gasoline tax rate may be as much as three cents higher than the regular state tax rate.

Where sales taxes are applicable to gasoline, tax rates also are higher. The table also shows the tax rates



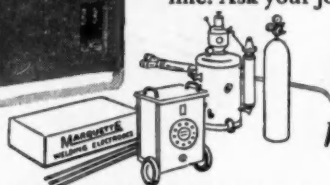
When
the job
says

WELD IT

Be ready with **MARQUETTE!**



More and more, Marquette is the welding equipment used by body and repair shops, welding shops, industry. Official equipment at the Indianapolis Speedway, Marquette welders, electrodes and rods have proved themselves fitted for the most difficult jobs. Whatever your requirement, you'll find your best answer in the Marquette line. Ask your jobber about Post advertised Marquette!



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Welding & Automotive Service Equipment

MARQUETTE MANUFACTURING CO. INC. • 307 E. HENNEPIN AVE. • MINNEAPOLIS 14, MINNESOTA



SPARKY SEZ—*There's a whale of a difference in welding rods. To find not only the right kind but the best of the right kind, make your selections from the Marquette Rod Bar at your jobbers'.*

STATE	GASOLINE* Rate (Cents)	DIESEL*	
		Rate (Cents)	Taxable as
Alabama.....	6H	...	a
Arizona.....	5	5	Use Tax
Arkansas.....	6½	6½	Use Tax
California.....	4½	4½	Use Tax
Colorado.....	6L	6	Use Tax
Connecticut.....	4	4	Use Tax
Delaware.....	5	5	b
Florida.....	7G	7	Use Tax
Georgia.....	6	6	Use Tax
Idaho.....	6	...	a
Illinois.....	4K	4K	Use Tax
Indiana.....	4	4	Use Tax
Iowa.....	4	4	Use Tax
Kansas.....	5F	5	Use Tax
Kentucky.....	7	7	Use Tax
Louisiana.....	9	9	Use Tax
Maine.....	6	6	Use Tax
Maryland.....	5	5	Use Tax
Massachusetts.....	4.3	4.3	b
Michigan.....	4½	6	c
Minnesota.....	5	5	Use Tax
Mississippi.....	7	8	b-c Use Tax
Missouri.....	2	2	Use Tax
Montana.....	6D	6	Use Tax
Nebraska.....	5	...	a
Nevada.....	5½B	5½	Use Tax
New Hampshire.....	5M	5	Use Tax
New Jersey.....	3	3	Use Tax
New Mexico.....	6E	6	Use Tax
New York.....	4	6	Use Tax
North Carolina.....	7	7	Use Tax
North Dakota.....	5N	5	Use Tax
Ohio.....	4	4	Use Tax
Oklahoma.....	6.58P	6.58	Use Tax
Oregon.....	6	6	g Use Tax
Pennsylvania.....	5C	5	Use Tax
Rhode Island.....	4	4	Use Tax
South Carolina.....	7S	7	Use Tax
South Dakota.....	5	5	Use Tax
Tennessee.....	7R	7	Use Tax
Texas.....	4	6	b
Utah.....	5	5	Use Tax
Vermont.....	5	...	a
Virginia.....	6	6	Use Tax
Washington.....	6½	6½	b
West Virginia.....	5	5	Use Tax
Wisconsin.....	4	4	Use Tax
Wyoming.....	5	4	b
Dist. of Columbia.....	4A	4	b-d

*—These are State taxes only. Federal Excise Tax of two cents per gallon applies only to a part of the fuels listed. For a specific fuel, see Bureau of Internal Revenue Regulation No. 44, Sec. 314.30.

A—District of Columbia—One cent of this tax expires June 30, 1952.

B—Nevada—One and one-half cents of this tax expires June 30, 1953.

C—Pennsylvania—Two cents of this tax expires May 31, 1953.

D—Montana—Six-cent rate effective until Anticipation Debentures are retired. (Not later than 1956)

E—New Mexico—Also municipal taxes up one cent per gallon. Six-cent rate effective until Highway Debentures are retired; thereafter, rate will be five cents.

F—Kansas—One cent of tax expires June 30, 1953.

G—Florida—Municipalities may levy up to one cent per gallon gas tax.

H—Alabama—Local taxes may range up to three cents per gallon.

K—Illinois—Rate will increase to five cents effective Jan. 1, 1953.

L—Colorado—Two cents of tax expires June 30, 1953.

M—New Hampshire—Two cents of tax expires on retirement of certain highway bonds.

N—North Dakota—One cent of tax expires on retirement of certain highway bonds.

P—Oklahoma—One cent of tax expires May 31, 1953.

R—Tennessee—One cent of tax expires on retirement of certain highway bonds.

S—South Carolina—One cent of tax expires June 30, 1954.

a—In lieu of fuel taxes, Alabama, Idaho, Nebraska and Vermont have established a differential fee whereby vehicles using non-taxed fuel are charged

Prepared by
NATIONAL HIGHWAY USERS CONFERENCE, INC.

Corrected to March 15, 1952

L-P GAS*		
STATE	Rate (Cents)	Taxable as
Alabama.....	...	a
Arizona.....	5	Use Tax
Arkansas.....	6½	Use Tax
California.....	4½	Use Tax
Colorado.....	6	Use Tax
Connecticut.....	4	Use Tax
Delaware.....	5	Gasoline
Florida.....	7	Use Tax
Georgia.....	7	Gasoline
Idaho.....	...	a
Illinois.....	4K	Gasoline
Indiana.....	4	Use Tax
Iowa.....	4	Gasoline
Kansas.....	5	Use Tax
Kentucky.....	7	Use Tax
Louisiana.....	9	Use Tax
Maine.....	6	Use Tax
Maryland.....	5	Gasoline
Massachusetts.....	4.3	b-Gasoline
Michigan.....	4½	c-Gasoline
Minnesota.....	5	Use Tax
Mississippi.....	8	b-e Use Tax
Missouri.....	2	Use Tax
Montana.....	6	Gasoline
Nebraska.....	...	a
Nevada.....	5½	Use Tax
New Hampshire.....	5	Use Tax
New Jersey.....	3	Gasoline
New Mexico.....	6	Use Tax
New York.....	4	Gasoline
North Carolina.....	7	f-Use Tax
North Dakota.....	5	Use Tax
Ohio.....	4	Gasoline
Oklahoma.....	6.58	Use Tax
Oregon.....	6	g-Use Tax
Pennsylvania.....	5	Use Tax
Rhode Island.....	4	Use Tax
South Carolina.....	7	Use Tax
South Dakota.....	5	Use Tax
Tennessee.....	7	Use Tax
Texas.....	4	L-P Gas
Utah.....	5	Use Tax
Vermont.....	...	a
Virginia.....	6	Use Tax
Washington.....	6½	b-Use Tax
West Virginia.....	5	Gasoline
Wisconsin.....	4	Gasoline
Wyoming.....	4	b-Use Tax
Dist. of Columbia.....	4	b-Gasoline

on motor vehicle fuels not normally defined as gasoline. Fuels used in diesel engines are the most commonly used type coming under this classification.

In most states, Use Fuel Tax Laws have been enacted to cover any fuel other than gasoline, or the term motor fuel has been broadened to

include fuel used in all types of internal combustion engines.

In the remaining states, other provisions for collecting taxes on fuels other than gasoline have been provided. The most common of these is a higher registration fee. These are more fully explained in the footnotes at the bottom of the table.



SAFE STOPS— in heats that melt Lead!

Every maintenance superintendent knows that brake lining often operates in temperatures that will melt lead. And frequently, these temperatures go higher.

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higher registration (or other) fees than are charged vehicles using taxable fuel.

Alabama—Increased registration fees. Increase, graduated according to weight, amounts to 1.666% for light vehicles to 87½% for heavy vehicles.

Idaho—Increased registration fees, graduated according to weight, amount to 528% for light vehicles to 208% for heavy vehicles.

Nebraska—100% increase of registration fees.

Vermont—100% increase of registration fees.

b—In addition to fuel taxes, District of Columbia, Massachusetts, Mississippi, Texas, Washington and Wyoming have established higher registration (or other) fees for vehicles using other than gasoline. District of Columbia—100% increase of registration fees.

Massachusetts—233% increase of registration fees.

Mississippi—Flat fee of \$50 if gross weight is less than 20,000 lb or \$100 if over that.

Texas—10% increase of registration fees.

Washington—25% increase of registration fees.

Wyoming—One mill tax per ton-mile on unladen weight.

c—Michigan—Five-cent rate (four cents for municipally-franchised vehicles) applies to motor fuel used in diesel engines only. When used otherwise, rate is 4½ cents.

d—District of Columbia—Kerosene for other than automotive use is exempt from fuel tax but subject to 2% Sales Tax.

e—Mississippi—Eight-cent rate applies to liquid fuel other than gasoline.

f—North Carolina—L.P.G. measurable, for tax purposes, on power potential of regular grade gasoline and taxed accordingly.

g—Oregon—Commercial vehicles using fuel other than gasoline are required to pay higher mileage taxes than gasoline-using vehicles but are exempt from use fuel tax.



OVER THE ROAD or ***— you can't beat a GMC!***

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As a result, no GMC owner has to strain away with an underpowered truck—or lose profit to a gas eater unsuited to the job.

Next, there's the GMC quality we describe as Pay Load Engineering—something you probably call "brawn in the right places."

Either way, it means GMC trucks are both trim and rugged—built to go over-the-road or over-the-rough without "dead weight" eating into their carrying capacity.

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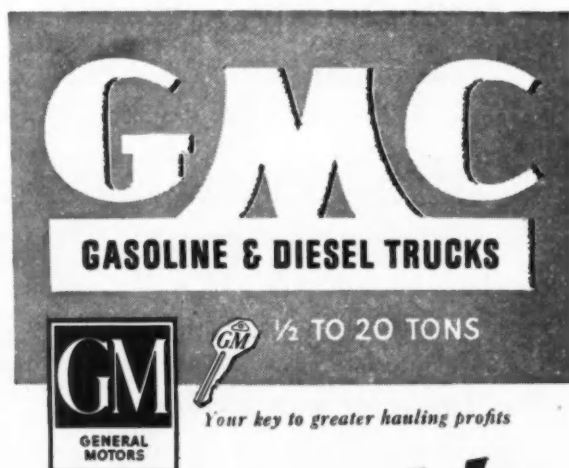
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Get a real truck!

Engineers See No Substitute for Copper Radiators

IT was fortuitous indeed that a glimmer of sunlight from Washington brightened the copper picture just as the panel of experts on automotive

radiators began its deliberations before a capacity crowd at the March SAE National Meeting in Detroit. It was fortuitous indeed when you con-

sider that the experts agreed unanimously that copper remains supreme as a material for radiators; that in the present state of the art there is no available or suitable substitute. The panel appraised various substitutes and gave objective engineering reasons why they would not do.

Conservation of copper and brass through design techniques was the theme of the presentation of J. H. Cooper of McCord Corp. Emphasizing the necessity for retaining copper and brass, he suggested a variety of avenues of attack by designers in the interest of reducing the weight of these critical materials. For example, it is feasible to redesign radiators so as to employ tanks and head sheets of thinner gages. Rounded or oval-shaped tanks can handle increased pressures with a major saving weight. Cores can be designed for higher pressures to use less copper.

Surprisingly enough, some subtle changes in styling can exert a greater effect on weight saving and cooling system efficiency than anything the radiator designer can do. Design of bumpers and grilles, location of bumper guards and fog lamps, and venting of the hood, as well as the layout of the frontal area have a controlling effect on the cooling system. For example, only a four-degree drop in cooling system temperature incident to elimination of restrictions at the grille can save at least one-pound of copper, with a saving of 44 cents per radiator.

The present trend to lower hoods and wider cores, in some instances results in loss of effectiveness of the fan, and contributes to bad idling conditions, leading to boiling in hot weather. In one instance, a specially formed bumper—of S-shaped cross-section—acted as a deflector, prevented air from entering the grille and lowered cooling efficiency by some 10 per cent. A change in bumper form made it possible to

(TURN TO PAGE 194, PLEASE)

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Federated STAR* Body Solder is the easiest bar solder you can use in the body and fender shop. The STAR shape exposes the solder in thin points to the torch so that you get quicker and more even melting than with old-fashioned bars. Also, the ribbed effect of the STAR shape makes the bar easier to handle!

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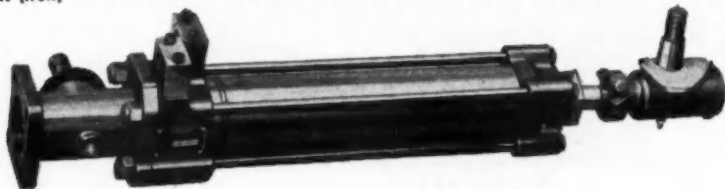
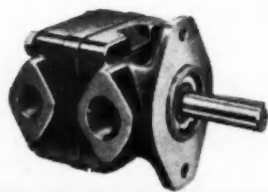
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Copper Radiators

Continued from Page 192

eliminate two pounds of copper in the radiator.

Wider spacing of bumper guards and fog lamps improved cooling by eight per cent in another case.

According to Cooper, improvement in radiator mounting to better cushion shock will make it possible to use a

lighter core and thus further reduce weight.

The panel was unanimous in its agreement that substitute materials require a considerable period of road testing before any decision can be made as to their effectiveness.

One of the hottest topics currently, the prospect of using aluminum radiators in mass production, was tackled by J. R. Holmes, chief engineer, Harrison Radiator Div., General Motors Corp. They have been working with aluminum since WWII, when a con-

siderable volume of radiators and heat exchangers was produced for the armed forces. At Harrison, the automotive development of aluminum radiators is purely in the development stage. Use of aluminum poses many problems and has some decided drawbacks. But there are enough excellent features to justify the current development program.

On the plus side—the decided advantages—Holmes cites the following:

1. Reduction in weight of the assembly
2. Relatively good heat transfer qualities
3. Availability of aluminum
4. Ability to handle high cooling system pressures. This is one of the major advantages.

With the present state of the art, aluminum has some serious disadvantages.

Coated and substitute metals, the subject of considerable discussion recently, were given a thorough airing by Joseph Gurski, Ford Motor Co. His general summation is that copper and brass simply cannot be equalled by any substitute materials from the standpoint of adequate life, corrosion resistance, solderability, and cost. He ruled out of the picture such popular substitutes as steel without protective coatings; painted steel; coated steel prior to fabrication; and coating after soldering.

Consideration is being given to the use of copper-clad steel for primary elements of radiators. This material, however, is limited by the quality and continuity of the coating since even

(TURN TO PAGE 196, PLEASE)

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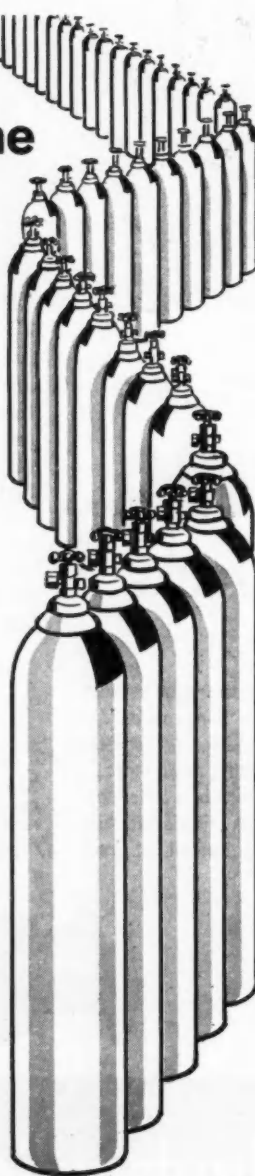


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It Won't Fly



An early-model White truck rigged by the Piasecki Helicopter Corp., Morton, Pa., is used for testing helicopter parts. An extension was welded into the truck body and a rotor assembly was mounted over the cab. It is operated through the regular helicopter shafting gearbox with a 600 hp engine. The test rig was operated for 1800 hours to prove the design. The truck is still operative, and may be moved to any location for testing under a variety of weather conditions

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1952...OUR **60**TH ANNIVERSARY YEAR

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Copper Radiators

Continued from Page 194

minute defects will ruin the assembly. Besides the difficulty of controlling quality and lack of adequate means of inspection, clad steel involves a serious economic loss of copper or brass in the manufacturing process since the scrap is not recoverable. Moreover, scrap radiator cores would be a total loss since they cannot be

salvaged except through costly refining procedures. Lead-alloy coatings are better on copper and brass than on steel for the reason that dip coats are porous and difficult to control.

Electroplated copper coatings on steel are not practical in mass production, according to Gurski, although they are acceptable for head sheets. Here the coating must be at least 0.003 in. thick and again there is the problem of continuity and perfection of the coating.

Fin surfaces must provide the equivalent of the characteristics of copper to assure reproducible cooling results in production. At best, it is difficult to get equivalent cooling without a major increase in size. This is understandable in the case of steel since steel has only 16 per cent of the thermal conductivity of copper. Copper-clad steel for fins requires 10 per cent of thickness in copper on each side, and even then it has the drawback of rusting out at the cut edges.

Solid zinc fins have good corrosion resistance and good solderability. However, they require a protective dip or painted coating. On the other hand, since the supply is limited, its use is questionable under present conditions.

The role of inhibitors in this picture was plotted by R. W. Scoville, Chrysler Corp. He showed that at best the cooling system is a perfect environment for corrosion; and recommended a promotional campaign encouraging the use of inhibitors in all radiators. He also stressed the need for replenishing the inhibitor during normal warm weather driving, recommending this as a campaign on the part of dealers and service stations.

With substitute materials, the corrosion problem would be greatly intensified because of the electrolytic action of dissimilar metals. It would impose greater duties on inhibitors, demand more frequent attention to the cooling system.

The paper by Dunn and White of Alcoa, given at another session, contains a section on the development of an aluminum alloy for automotive radiators, stemming from experience in producing automotive heat exchangers. They recommend use of a 3S alloy sheet with cladding of Alcoa C43S. The problem of developing a suitable electrolytically protective coating has been solved by using Alcoa XA30 brazing sheet. The authors have not yet complete sufficient road testing to decide whether an exterior paint coating will be necessary to protect against road splash.

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Second Freight Handler: "Well, the price of milk went up five cents a quart."

First Freight Handler: "So?"

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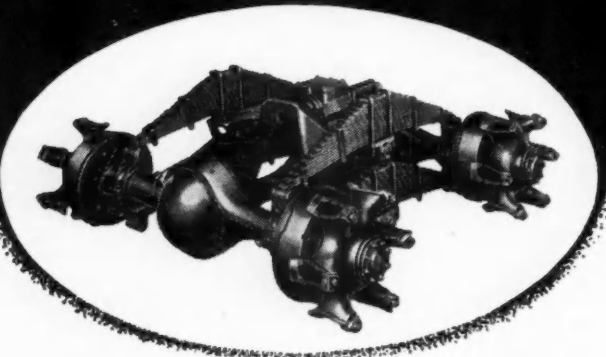
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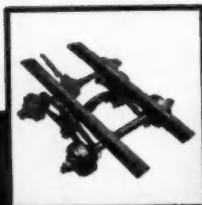
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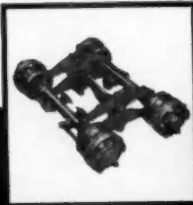
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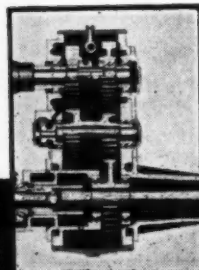
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United Engine & Machine Works, W. Holmes Rd., Lansing, Mich.
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Fabco: FAB Mfg. Co., 1249—67th St., Oakland 8, Calif.
Frazier: Springfield Body & Trailer Co., 1631 College St., Springfield, Mo.
Grico Super-Flex: Grico Two Axle Drive Co., 19840 Eight Mile Rd. W., Detroit 19, Mich.
Hoobler: Union Metal Mfg. Co., 1432 Maple Ave. NE, Canton 5, Ohio
Little Giant Products Inc., 1530 N. Adams St., Peoria 3, Ill.
Load Booster: Detroit Automotive Products Corp., 8701 Grinnell Ave., Detroit 13, Mich.
Neway Equipment Co., 1183 E. Lake-ton St., Muskegon, Mich.

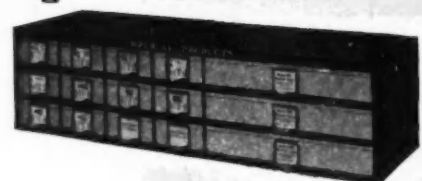
Six Wheels Inc., 1584 E. 20th St., Los Angeles 11, Calif.
Thornton Drive: Detroit Automotive Products Corp., 8701 Grinnell Ave., Detroit 13, Mich.
Trailmobile Inc., 31st & Robinson Aves., Cincinnati 9, Ohio
Truck Equipment Co., 1791 Fillmore Ave., Buffalo 14, N. Y.
Trucktor Corp., 156 Wilson Ave., New-ark 5, N. J.
Truxmore: Truck Equipment Co., 1791 Fillmore Ave., Buffalo 14, N. Y.
Utility Trailer Mfg. Co., PO Box 3608, Terminal annex, Los Angeles 54, Calif.

NO TIME LOST

in getting the
BRASS FITTINGS
SHUT-OFF VALVES
FLEXIBLE
LINES
you want



Imperial Fitting Stock No. 224-F contains 514 brass fittings and 26 shut-off valves and drain cocks. Has 21 drawers completely labeled, 84 dividers.



Imperial Flexible Line Make-Up Stock No. 313-FNA contains 3 sizes of hose and 144 attachable fittings for making up virtually all needed flexible lines. 12 drawers for fittings, 3 for hose, all completely labeled.



Imperial Fitting Stock No. 430-FC contains 218 fittings. Has 5 drawers, 100 fully labeled compartments. A small broad coverage kit.

See Your Jobber

Brass Fittings • Flexible Fuel Lines • Tube Working Tools • Battery Hydrometers • Barrel Faucets • Welding Equipment

These Imperial Stocks are ideal for fleet owners. They contain the most needed brass fittings, shut-off valves, flexible hose and attachable fittings for handling gas and oil line work in a hurry.

No time lost—the right parts are instantly available from convenient compartments fully labeled to show illustration, size and catalog number. Fitting, shut-off valve and drain cock wall chart aids in selecting the right parts for the job. Costly pick-ups and delays are eliminated. Re-ordering is easy. No wasteful overstocking.

Various sizes of stocks to meet your needs. Cabinets can be placed in shelving or on the bench or floor. Additional cabinets can be added as required. Ask for Catalog No. 124.

THE IMPERIAL BRASS MFG. CO.
1209 W. Harrison St., Chicago 7, Illinois

IMPERIAL

Maybe You've Got the W

IN THE OIL

IN THE GAS

Miracle Power*

COLLOIDAL SYNTHETIC GRAPHITE IN SUSPENSION

PUTS THE "PURR-R-R" IN ENGINE PERFORMANCE*

*Reg. U.S. Pat. Off.

Every 1000 Miles
Use in Gas and Oil

*Treats the Engine
Not the Oil*

PREVENTS "Engine Ulcers"... CAUS

Wrong Idea

MIRACLE POWER TREATS THE ENGINE—NOT THE OIL!

Miracle Power is *not* a purge, *not* a detergent, *not* a chemical. Miracle Power is all lubricant—contains only colloidal synthetic graphite, completely suspended in a fine, light blending oil.

Used in oil and gas, Miracle Power places a breathlike protective graphite film on vital engine parts. This graphite film holds oil on engine parts longer—gives standby lubrication in the temporary absence of oil—prevents dry starting damage when you start up after long stops.

THE AP PARTS CORPORATION
Miracle Power Division
1133 AP Building • TOLEDO 1, OHIO
Manufacturers of: MUFFLERS • PIPES • MIRACLE POWER • dgf 123



... CAUSED BY DRY STARTING

CCJ News Report

Continued from Page 31

clined to grant a further stay. At press time it was still expected that the controversy would be carried to the Court of Appeals, the State Supreme Court and then to the U. S. Supreme Court.

People in the know explained that the state courts could rule only on technical qualification; that only the U. S. Supreme Court could consider the broader issues of the law's effect on the general economy. Hence it was almost a foregone conclusion that this particular bill would go all the way.

Starting April 1, however, the Commission said penalty and interest would be imposed on delinquents. The penalty is 5 per cent of the tax owed, plus interest of 1 per cent for each month of delinquency. The Commission said it would also revoke or suspend highway use permits and plates of carriers who fail to pay. The permits and plates are required in order to operate legally in New York State.

Most truckers were placing a "Paid Under Protest" statement on their checks.

Engine Rebuilders

San Antonio has been selected as host city for the Automotive Engine Rebuilders Association. On May 5, 6 and 7, engine rebuilders will flock to the Plaza Hotel, where 83 conference booths will be set up for product display. The opening session will begin Monday afternoon. Here in part, are some of the subjects that will be discussed:

"Quality Control in Machine Shop Operation," by H. B. Eldridge, Universal Parts and Service, St. Louis, Mo.

"What a Factory Expects from the Automotive Engine Rebuilder," by Al Lindsley, Waukesha Motor Co., Waukesha, Wis.

"Crankshaft and Cylinder Plating," by Fred J. Britz, Kelly Air Force Base, San Antonio, Texas.

"What I Have Learned About Machine Shop Management," by Geo. P. Henderson, Auto Gear and Parts Co., Philadelphia, Pa.

"Scheduling Jobs," by H. B. Truslow, Richmond Auto Parts, Richmond, Va.

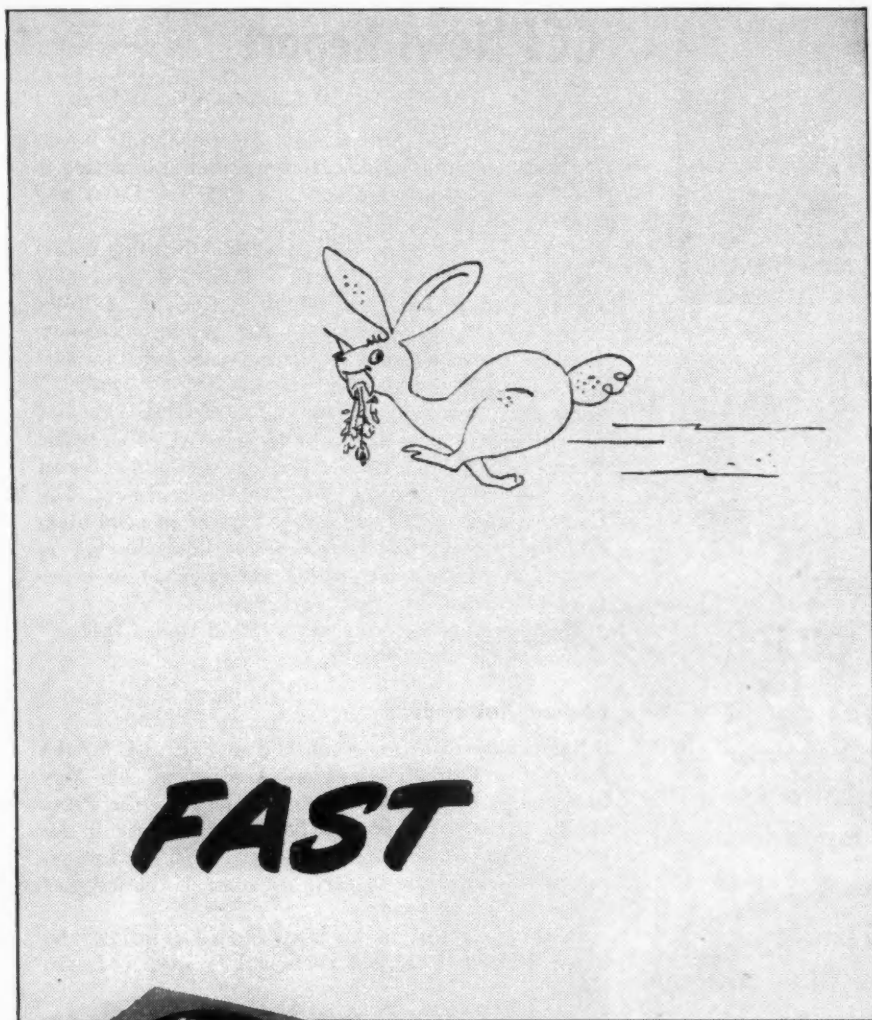
SAE Passenger Car Meeting

Engineers, too, have been busy. The SAE National Passenger Car, Body & Materials Meeting at Detroit in early March was extremely well attended. Most of the sessions drew from 450 to 500. The meeting culminated in a banquet, with General George C. Kenney, USAF (ret.) speaking on the subject of "What's With the World."

One of the highlights of the meeting was a paper presented by A. E. Cleveland and O. Enoch, of the Ford Motor Co., on the subject of "Combustion Chamber Deposits and Their Relationship to Power Loss." Two other papers on sparkplug studies are condensed later in this issue.

N. Y. Terminal Closed

Controversial Newark airport is not the only thing bothering the Port of New York Authority. In mid-March the agency closed its \$10 million union truck terminal in lower Manhattan. Beset by "too many unions" and "fancy trimmings," the terminal had but
(TURN TO PAGE 204, PLEASE)



KESTER ACID-CORE SOLDER

FAST In Soldering Action
FAST In Saving Your Time

Are you stealing "carrots" from your own garden of profits by using "lower price and just-as-good solder," instead of 24 "karat" Kester? If so . . . you're fooling no one . . . not even a rabbit. He knows the genuine product when he sees it!

KESTER SOLDER COMPANY
4205 Wrightwood Ave., Chicago 39
Newark 5, New Jersey • Brantford, Canada



News Reports

Continued from Page 203

four customers (over-the-road carriers) using the facility at the time it closed. At best it had had but 22, using only 37 per cent of capacity.

Spokesman for the Authority said there was real hope for reopening the terminal at a later date, along lines suggested by carriers, if the multitude of difficulties besetting the operation can be resolved.

Chrysler Experimental V-8

Chrysler Corp. recently disclosed that an experimental, higher-compression version of its standard "FirePower" V-8 engine, using high-octane gasoline, produces 353 hp, nearly double the output of the present production model of this engine, without increase in the size of the engine or the use of supercharging. The company also announced that, using standard compression and burning regular premium type fuel, another experimental engine produces 309 hp.

Continental Improvements

Continental Motors Corp.'s Air-Cooled Engine Div. recently announced that all three models of its AU series of industrial air-cooled engines are now available with a new external breaker point, condenser, and governor system which is said to combine accessibility with improved performance and service life. The unit, according to the company, consists of breaker points and fly-ball type governor driven by the camshaft and grouped with the condenser under a removable cover.

(TURN TO PAGE 208, PLEASE)

African Post Office



Complete postal facilities are brought to outlying districts in the Union of South Africa by means of truck-trailer units. International makes the tractor, (L-165) and Brookhouse the semi-trailer shown above. This is one of two units operating out of Durban. There were 14 Internationals recently added to the South Africa postal fleet of 60. The units travel from town to town, making pickups and deliveries and furnishing postal facilities including scales, stamps and writing surfaces

COMMERCIAL CAR JOURNAL, April, 1952

IF you will read carefully the written statement of H. P. Welch Co.—reproduced on the preceding page—we believe you will be impressed with the importance of the savings made by using Gates *specialty engineered* TRUCK BELTS in trucks and buses.

We have similar statements from many big operators, a few of whose names are also published on the preceding page. These users are located from Coast to Coast and are selected *geographically* so that there will almost surely be one near you whom you know and can conveniently ask. Any one of them will tell you that Gates TRUCK BELTS are cutting his belt costs by *fully one-half*!

A 50% saving in belt costs is, of course, very much worth while. But there is still another saving that is *far greater than this*.

Dollars Saved by Reducing Road Delays are Biggest Dividend of All!

Every user of Gates TRUCK BELTS will tell you that the much longer service life of these *specialty engineered* belts gives still greater savings by cutting down road delays for belt servicing—thus increasing the priceless *operating time* of their units which is, after all, the only thing that pays them (or you) a profit.

We believe that you will want to consult some of these users. That is why we publish a few of their names. Write them or talk with them. Let their experience convince you that you, too, can profit by using the belt that is *specialty engineered* for Trucks and Buses—the Gates TRUCK BELT.

Specialty Engineered for TRUCKS and BUSES

In addition to having a tough, multiple-ply cover of more than double durability, Gates TRUCK Belts are built with RAYON Cords. You know how greatly RAYON Cords increase the life of truck TIRES. Why not get the advantage of 50% to 80% longer wear in your truck BELTS by insisting on the Belt that is *specialty engineered* for TRUCKS and BUSES—the GATES TRUCK BELT.

Look for this "T"

Look for the letter "T" on the belt itself—as well as on the label of every belt you buy for truck service. "T" means that the belt has been *specialty engineered* for TRUCKS and BUSES. You can be sure of getting the belt designed for this more demanding service only by seeing to it that you are delivered belts which bear this letter "T".

*Reg. U. S. Pat. Off.

The World's Largest Maker of V-Belts

Gates Belt Jobbers in Every Distributing Center Can Supply You Promptly.

CHICAGO, ILLINOIS

National City Lines

KANSAS CITY, MO.

Kansas City Police Dept.

SPOKANE, WASH.

United Truck Lines, Inc.

AKRON, OHIO

Yankee Lines Inc.

RIDGEWOOD, N. Y.

Hegeman Farms Corp.

PORTLAND, OREGON

Damascus Milk Co.

LOS ANGELES, CALIF.

Asbury Transportation Co.

OMAHA, NEBRASKA

Overland Greyhound Lines

CINCINNATI, OHIO

Cincinnati Street Railway

LOUISVILLE, KY.

Ewing - Von Allmen Dairy Co.

DETROIT, MICHIGAN

Red Star Transit Co. Inc.

DENVER, COLORADO

Pacific Intermountain Express (PIE)

News Reports

Continued from Page 204

Said to double point and spark plug life by operating at half engine speed, the unit's points and plug function only on the firing stroke.

Rates Bill Presented

Senator John W. Bricker (R., O.) has introduced S.2752 which would oblige the Interstate Commerce Com-

1952 Domestic Truck Factory Sales By G.V.W.*

	5,000 lb. and less	5,001-10,000	10,001-14,000	14,001-16,000	16,001-19,500	19,501-25,000	Over 25,000	Total
January, 1951.....	50,435	21,029	6,476	16,957	5,528	5,657	3,180	109,282
December, 1951.....	27,795	13,823	3,724	12,736	3,650	6,562	2,844	70,834
January, 1952.....	30,803	15,649	4,873	16,666	4,909	8,323	3,971	85,184

* Automobile Manufacturers Association.

mission to keep open files of contract carriers' actual rates, rather than publish minimum contract terms. The bill, however, is not expected to be considered at current transportation hearings.

Senate Warned of Dangers In Size and Weight Bill

The Senate Interstate Commerce Committee was warned recently that the proposed Federal Size and Weight Bill, S.2363, would write into law truck size and weight standards which were proposed for the first time in N. Y. State as traffic regulations in 1914.

According to John V. Lawrence, managing director of the American Trucking Association, regulations of the bill are the same as those published to regulate vehicles with metal or solid rubber tires. He went on to say that progress made in pneumatic tires, which came into truck use in 1927, and in softer springs and shock absorption have made even the heaviest loads easier on all types of pavements. He particularly objected to the proposed 18,000-lb ceiling on truck axle weights.

Tinted Glass for Chevrolet

Chevrolet Motor Div. of General Motors Corp. has announced the availability of tinted glass for all windows (except the convertible rear window) in its 1952 models. The company has also disclosed a new method of machining differential gears on heavy-duty trucks for more strength and durability.

(TURN TO PAGE 210, PLEASE)

A Century Young



The last truck built by Studebaker during the company's first century of manufacturing operations was the occasion for a celebration when it came off the line in South Bend, Ind., not long ago. Studebaker officials joined the men on the production line in welcoming the truck as it drew alongside a well-known transportation symbol of another era—the familiar Studebaker farm wagon. In the center of the group at the left, is Kenneth B. Elliott, executive vice president; at the right, Richard G. Hudson, manager of Studebaker's truck division; and at the far left, Lloyd Ransom, superintendent of the truck plant.

for greater safety



KD 778
Class "A"
TWO BULBS
with Complete
Reflectors;
Amber-Red

40% more light from K-D's new turn signal

This new K-D two-bulb double face lite design with doubled initial candle power assures ultimate turn signal protection. Experimental designs convinced us that our two complete reflectors and two-bulb lite produced 40% more light than our design using two reflectors with a single bulb. Increased reflector area plus bulb actually attached to reflector give more light output and permanent control of beam pattern. The new design eliminates glare-back from the sun and oncoming headlights . . . intensifies "on-and-off" contrast.



KD 714F-2
KD 714F-3

IMPROVED SWITCH FLASHES 2 OR 3 BULBS

KD 714F-3 . . . with inbuilt flasher and fuse . . . with audible click . . . flashes two or three 21 cp. bulbs or two or three sealed beam turn signal bulbs on each circuit. **KD 714F-2** flashes two bulbs on each circuit.



KD 777

SEALED BEAM AND REFLECTOR-BULB TURN SIGNALS

K-D's newly designed Turn Signals . . . double face, bracket and flush mounting single face . . . are available individually or in kits. Minimum size to house sealed beam signal bulbs . . . meets State and SAE Class "A" specifications. Heavy duty bonderized steel construction.

	Single Face	Double Face	Flush Mounting
Reflector-Bulb	KD 777	KD 778	KD 779
Sealed Beam	KD 787	KD 788	KD 789

THREE REFLECTOR-BULB KITS . . . TWO SEALED BEAM KITS

K-D LAMP COMPANY
1910 ELM STREET • CINCINNATI 10, OHIO
WAREHOUSES: CHICAGO • LOS ANGELES • NEW YORK



You get a new high in

jack performance with the . . . **AUSCO**

fleet hydraulics

The more you look into this Ausco axle jack

the more you'll **SEE**

why it is far ahead

in dependability and easy operation

Inside the Ausco Hydraulics are many reasons why AUSCO brings you a new high in jack performance. It will pay you to examine this cut-away illustration and see how Ausco's superior engineering makes this jack easier to use, more economical to maintain. Take particular note of these points of superiority:

SEE improved AUSCO pressure seal.

Ausco uses a ram packing of oil-impervious synthetic. This material is homogeneous and provides a BETTER SEAL because it expands in *all* directions.

SEE how AUSCO castings prevent leakage.

Exclusive Ausco-developed non-porous castings are guaranteed to be LEAK-PROOF and UNBREAKABLE. In addition, extra pressure is secured at those joints where leakage is most likely.

SEE how AUSCO prevents Seepage and

Sticking. Ausco uses specially impregnated fine-grain leather that remains firm throughout long service periods. This material prevents seepage, adds life to the jack, and prevents sticking, even after long periods of storage.

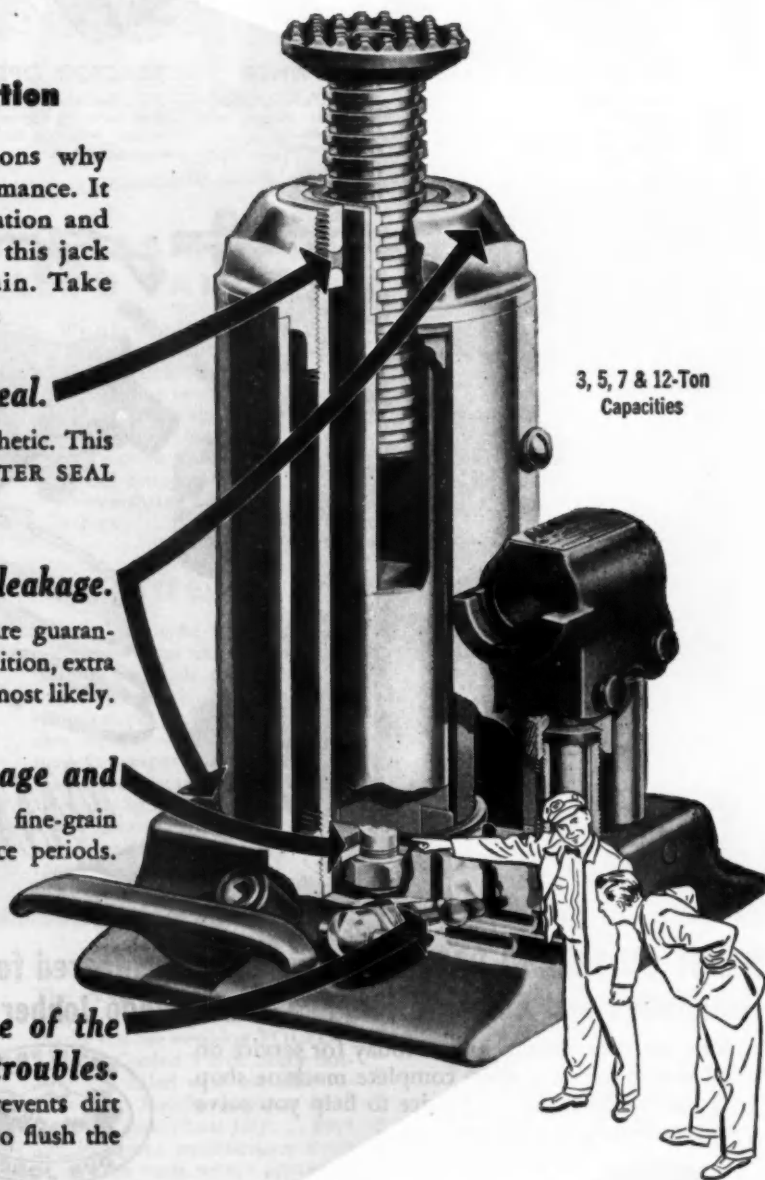
SEE how AUSCO eliminates one of the main causes of hydraulic operating troubles.

Simplified, exclusive STRAIGHT LINE oil flow prevents dirt from accumulating in pump and makes it easier to flush the pump clean.

FREE AUSCO CATALOG brings you *all* the inside reasons why you can't beat an AUSCO FLEET HYDRAULIC for efficient, economical performance. Your copy sent on request to:

AUTO SPECIALTIES MFG. CO., ST. JOSEPH, MICH.

for 40 years, one of the world's largest manufacturers of original equipment and replacement hydraulic and mechanical jacks.



3, 5, 7 & 12-Ton
Capacities

46 Years of Precision Engineered Quality

TOLEDO MOTOR and CHASSIS PARTS

FIRST CHOICE OF ALL THREE



REPAIRMAN

... because Toledo motor and chassis parts fit accurately ... are quickly installed ... assure customer satisfaction.



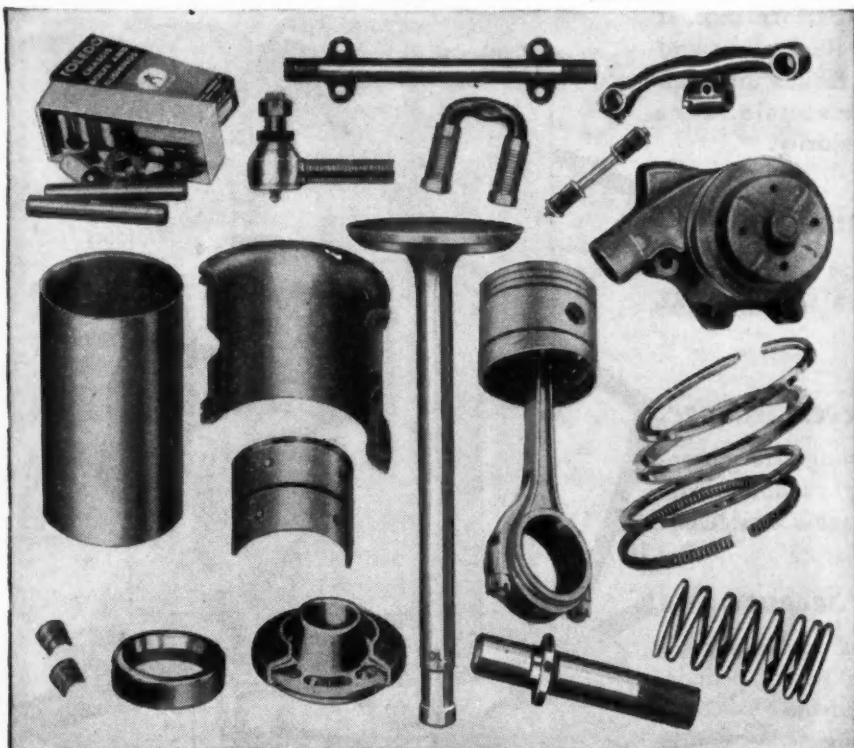
FLEET OWNER

... because Toledo heavy-duty parts wear longer, cut maintenance costs.



TRACTOR OPERATOR

... because Toledo heavy-duty parts are dependable, give longer working hours, lower operating costs.



INSIST ON TOLEDO PARTS ... Precision Engineered for Easy Installation and Accurate Fit. See Your Toledo Jobber Today

Yes, see your Toledo jobber today for service on all automotive supplies, complete machine shop facilities and technical service to help you solve any automotive problem.



The TOLEDO

STEEL PRODUCTS COMPANY

Division of Thompson Products, Inc.

TOLEDO, OHIO

Since 1906 Makers of The World's Finest Automotive Parts



News Reports

Continued from Page 208

Army Tests Fuel

A United States Army Research Unit, formally designated as the 983rd Q. M. Petroleum Products Laboratory (Mobile), will start operations in Waukesha, Wisc. in the near future under the sponsorship of the Waukesha Motor Co. The principal work of the unit will be to study the characteristics of motor fuels and general lubricants used by the Armed Services, training will also be given in operational and maintenance procedures in connection with the fuel rating laboratory engines manufactured by Waukesha.

Advisory Council OK'd

Transportation executives, who met recently with Secretary of Commerce Charles Sawyer, approved formulation of a council to advise the Department of Commerce on general transportation matters. The first formal meeting is set for late in April.

FTC Discount Ruling Attacked

Four tire companies are reported to be asking for a review of the Federal Trade Commission's ruling which limits discounts on replacement tires and tubes to a single carload of 20,000 lb in one transaction. In addition, the firms are requesting a declaratory judgment under the terms of the Declaratory Judgment Act.

Brake Sales Hit Record

In its recent annual report, Westinghouse Air Brake Co. reported record net sales of \$93,909,846 in 1951, compared with \$62,032,321 during 1950. Net income rose from \$11,276,058 in 1950 to \$11,572,652 in 1951. At the end of the year, the company had a backlog of unfilled orders of approximately \$61 million, compared with about \$39 million at the end of 1950.

Munitions Carriers Organize

Organization of a Munitions Carriers Conference for national affiliation with American Trucking Associations was accomplished in Washington by representatives of more than thirty motor freight companies. Formation of the new national body followed conferences with military traffic, Interstate

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COMMERCIAL CAR JOURNAL, April, 1952

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Commerce Commission, and other governmental spokesmen interested in problems of haulers of materials and supplies requiring special equipment, personnel, and operating practices.

Many munitions items, it was explained, are classed as "explosives" despite the fact they can be discharged only under deliberate and intentional circumstances. Objectives of the new organization include assisting authorities to codify and improve pertinent regulations, to advance research into freight handling methods and equipment and to cooperate with governmental agencies in improving service to them.

William P. Wells of Navajo Freight Line, Los Angeles, was chairman of the organization committee.

Other committeemen are Marvin Blakeney, Jr. of East Texas Motor Freight Lines, Dallas; John Bridge of Ringsby Truck Lines, Inc., Denver; C. O. Gillogly of C. I. Whitten Transfer Co., Huntington, W. Va.; Ernest J. Gottula of Gottula Trucking & Transfer, Inc., Pueblo, Colo.; O. P. Peck of Herrin Transportation Co. Houston; Edwin M. Sellers of Baggett Transportation Co., Birmingham, Ala.; Paul Shriver of Haves Freight Lines, Inc., Mattoon, Ill.; L. L. Stearns of Riss & Co., Inc., Kansas City, and E. F. MacMillan of Consolidated Freightways, Inc., Portland, Ore.

Gasoline Quality Improves

Anti-knock quality of both regular and premium grade gasoline is improving despite a continuing drop in tetraethyl lead content, according to a recent survey which found that gasoline sold in 47 cities in the United States and Canada showed premium grade gasoline octane averaged 89.9 compared with 89.6 in October. Regular gasoline averaged 83.2 octane compared with 82.8 in October.

London Buses Tour U. S.

Three double-decker London buses are visiting more than 40 major U.S. cities from March 18 through July 11, together with their pilot car, an Austin sedan, and their Leyland and British Ford service trucks.

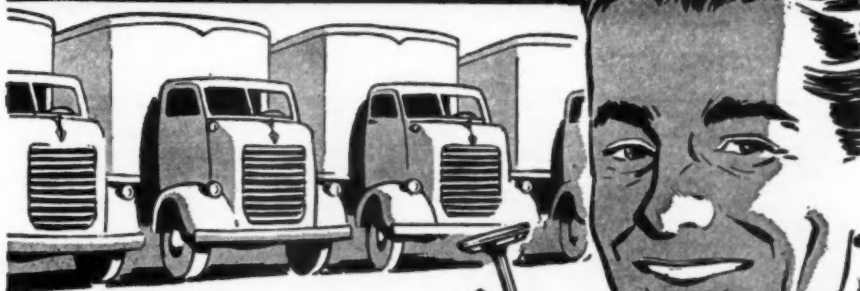
The buses are part of a fleet of 7250 double-deckers developed especially for the London Transport Executive, which serves 10,000,000 persons in an area of about 2000 square miles. Sponsor of the caravan is the British Travel Assn.

(TURN TO NEXT PAGE, PLEASE)

COMMERCIAL CAR JOURNAL, April, 1952

My VALVES Last Up To 5 Times Longer...

SINCE I INSTALLED HEAVY-DUTY TOLEDO VALVES AND ROTOCAPS



LONG LASTING TOLEDO VALVES



Whether you operate buses, heavy trucks or light trucks, you'll get greater economy, better performance and lower maintenance costs when you install longer lasting heavy-duty Toledo valves.

AEROTYPE VALVES

Toledo Aerotype valves outlast ordinary valves as much as 3 to 1. They are made specifically for the long, steady pounding and temperature stresses of heavy-duty operation. Valve facing is made of superior heat resistant metal that retards cracking and burning. Special hardening gives stems greater resistance to scuffing, greater tensile strength and longer wear.

SODIUM COOLED VALVES

The coolest running, longest-lasting, most burn-proof valve ever made. It's the amazing TOLEDO Sodium Cooled Valve. Made hollow and filled with metallic sodium that liquifies at about 200° F, it dissipates heat fast... pays off in lower maintenance costs under the most severe operating conditions.

ROTOCAP



TOLEDO Rotocaps automatically rotate valves while engine is running, giving up to 5 times longer valve life! Hot spots are eliminated, valve face and valve seats are kept clean of carbon deposits to prevent blow-by and valve burning. Improves valve guide lubrication for reduced valve sticking, less valve stem and guide wear. Rotocaps are easy to install.

Toledo Heavy-Duty Aerotype Valves, Sodium Cooled Valves and Rotocap valve rotators are available for a wide range of popular trucks and buses.

See Your Toledo Jobber Today or Write for Information.



The TOLEDO

STEEL PRODUCTS COMPANY
TOLEDO, OHIO

Division of Thompson Products, Inc.
Since 1906 Makers of The World's Finest Automotive Parts

News Reports

Continued from Page 211

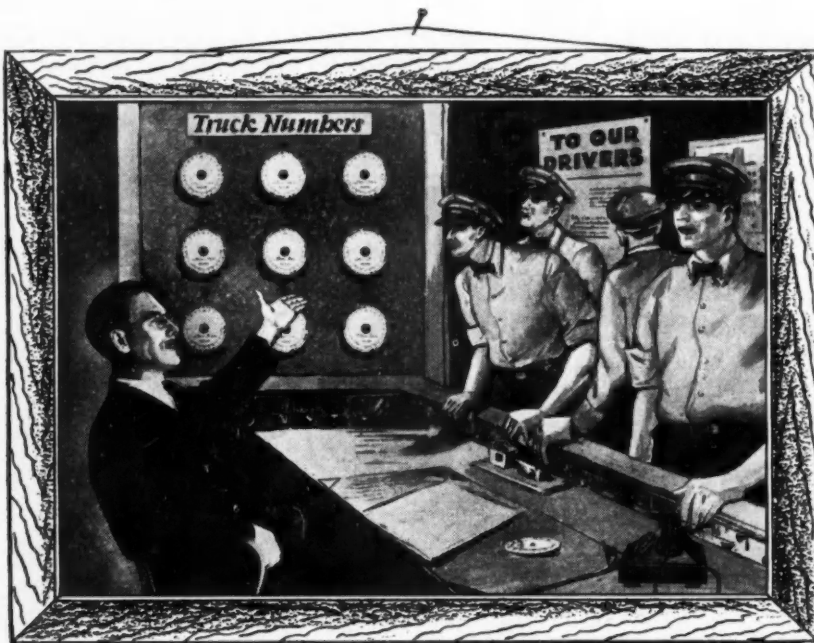
Explosives Regulation Upheld

The U. S. Supreme Court has held that a regulation of the Interstate Commerce Commission that requires drivers of vehicles transporting explosives, inflammable liquids, inflammable compressed gases or poisonous gases, to avoid driving into congested thoroughfares as far as practicable, is sufficiently

definite to support a criminal indictment for its violation. The Court asserted that the regulation establishes a reasonably certain standard by which a carrier may make a choice of routes for transporting explosives.

Timken Engineer Dies

L. Ray Buckendale, 59, vice president in charge of engineering of Timken-Detroit Axle Co. and a past president of the Society of Automotive Engineers, died March 6, in Detroit, Mich.



Portrait of a Man Preventing an Argument

"There you are, boys—your trucks wrote their own records."

A Servis Recorder Chart Promptly Settles All Arguments... Even Better, It PREVENTS Them.



As an experienced truck operator, you realize that nothing impairs driver morale more than getting into arguments over yesterday's work record. They are invariably bad, because in the end the driver is still convinced that he is *right*. Therefore, *prevent them*—don't let them come up at all!

Fortunate is that truck manager who has *Servis Recorder* charts before him on his desk—or better yet, hanging on their proper pegs on the wall, *right up where everybody can see them*.

He can stop any argument before it gets started by simply pointing up to the charts on the wall and saying quietly, "Boys, there's the answer—*there are all the FACTS*."

The *Servis Recorder* shows you every time the truck stood idle and how long. And Overtime, too. Write for the full story. The Service Recorder Company, 1375 Euclid Ave., Cleveland 15, Ohio.

The Servis Recorder

Tells Every Move Your Truck Makes

ATA Makes Appointment

The American Trucking Associations, Inc. has announced appointment of J. Walter Thompson Company as its national public relations counsel immediately and as its advertising agency effective May 1.

The public relations appointment is the first such designation made by ATA, which has its own national public relations staff, headed by Walter W. Belson as Public Relations Director and Assistant General Manager. The agency arrangement will involve no change in the ATA staff organization, Belson said, but will bring to ATA the additional advantages of J. Walter Thompson Company resources in the planning and execution of various projects, particularly those adapted to facilities of the agency's various field offices.

Paint School Schedule Posted

The Binks Mfg. Co., Chicago, Ill., has announced the schedules through June for its spray painting school. New classes will be held Monday through Friday: April 2 to 6 inclusive; May 7 to 11; June 4 to 8.

Many dealers and shop owners have found the Binks school a help in uncovering ways to do higher quality painting at a lower cost. The school is suitable for training supervisors and managers. However, Binks points out that enrollment is not limited to supervisors and managers. William Beacham, paint chemist and spray painting authority, is again in charge of the classes, which are conducted at the Binks Chicago plant.

(TURN TO PAGE 330, PLEASE)

After 2,000,000 Miles



Completing a record of two million miles without an accident, driver William Ferreira (left) receives the "Driver of the Year" award for Northern California from Governor Earl Warren (center) and J. H. Phillips, district manager in Oakland for Auto-car Co. The award consists of an engraved plaque, a diamond lapel pin and \$300. The driver-of-the-year contest is sponsored by the Northern California chapter of the National Safety Council, the Truck Owners Association of California and the Independent Brotherhood of Teamsters, Chauffeurs, Warehousemen and Helpers of America.

Universities Offer Fleet Training Courses

IN response to a demand for extension courses for supervisory personnel in fleet maintenance and management fields, several university or college extension programs are offered for 1952. While there is no definite rule, a standard supervisor training course offers a minimum of 40 hours of instruction in selecting, testing, training and supervising commercial motor vehicle drivers. Courses also cover preventive maintenance procedures, transportation, industrial relations, accident reporting and other highway safety and operational subjects.

Practical laboratory and field exercises provide each class member an opportunity to use driver-testing equipment and to learn by practical demonstration, how to apply these tests to others. Classes are arranged in groups of about 50 students to allow greater individual instruction.

Maintenance supervisors' courses have been scheduled at Montana State College, and Pennsylvania State College. Top management courses are scheduled at the University of Florida, the University of Washington, and Pennsylvania State College. In addition, the University of California, Oregon State College, Pennsylvania State College and Northwestern University will conduct a two-day refresher course.

Penn State Plans

The Institute of Public Safety of The Pennsylvania State College will conduct a 2-day Refresher Conference for Motor Fleet Supervisors on April 16 and 17, 1952. The conference will be held at State College, Pa.

Among problems to be discussed are: How to Conduct a Meeting, How to Conduct a Conference, Economics of Motor Transportation, Effective Methods of Communication, Human Relations in Motor Transportation.

The fee for this conference is \$15. Interested persons should contact Amos E. Neyhart, Institute of Public Safety, The Pennsylvania State College, State College, Pa.

Penn State will offer its third course for trainers of commercial

drivers on May 5-9, 1952. The course is intended for driver trainers, fleet supervisors, managers or others responsible for training new or experienced commercial drivers.

Several hours are devoted to teaching methods. Then job requirements

and characteristics of good drivers are discussed. These topics are followed by the discussion and use of written tests and performance tests and skill developing exercises.

Other general items considered are accident procedures, conservation of equipment and cargo, and driver attitudes. The luncheon sessions will include short talks by members of the class.

The fee for this short course, including five luncheons, is \$45.00.

(TURN TO PAGE 216, PLEASE)



use only
**FACTORY NEW
GENUINE
BENDIX DRIVES
and
PARTS!**



Bendix Drive

ECLIPSE MACHINE DIVISION of

ELMIRA, NEW YORK

Export Sales: Bendix International Division, 72 Fifth Ave., New York 11, New York



You can be proud of every repair job when you use only genuine parts. When it comes to servicing Bendix* Drives, be sure to use only *factory new* Bendix Drives and Parts. This means your customers will get the same dependable performance built into every original Bendix Drive—performance proven by over 85,000-000 installations. Insist on *factory new* Bendix Drives and Parts when you order from your distributor.

*REG. U.S. PAT. OFF.

Fleet Training Courses

Continued from Page 215

More information can be obtained by writing George V. Deal, Institute of Public Safety, The Pennsylvania State College, State College, Pa.

Penn State's seventh annual course for Motor Vehicle Maintenance Supervisors is scheduled for May 19-23, 1952. The course will be conducted on the Penn State Campus as in past years.

Attendance at this short course has been quite good each year and shortages of parts and materials indicate an even greater attendance this year.

Preventive maintenance is stressed. A few of the topics covered are:

Vehicle selection, effective use of space and equipment, employee selection, orienting training, basic maintenance requirements of the various systems of the vehicle, maintenance and handling of rims and tires.

The fee for this short course is

\$20.00. Additional information can be obtained from Amos E. Neyhart, Institute of Public Safety, The Pennsylvania State College, State College, Pa.

A basic fleet course will be conducted on Penn State Campus during the week of September 22-26, 1952. The details of the course are not available at press time, but first reports indicate that the recommendations made by the National Advisory Committee for Motor Fleet Supervisor Training will be followed essentially, with a few minor changes.

Michigan Trains Dispatchers

Establishment of a unique training program designed for truck dispatchers and warehouse foremen of the trucking industry has been announced by Michigan State College.

The first five-day course under the new program was scheduled March 31 to April 4, according to Bernard I. Loft, of the college's Continuing Education Service, course director.



Short-range aim of the program: Better training for the men who route and control the flow of the nation's 9,000,000 trucks. Long-range aim: Safer highways for everyone.

Mr. Loft is particularly enthusiastic about the possibility of offering Michigan dispatchers and foremen better training opportunities. He

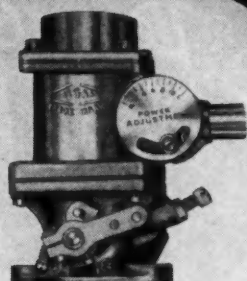
(TURN TO PAGE 218, PLEASE)

Improved Engineering

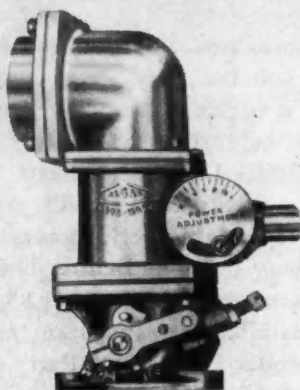
in the NEW

ALGAS

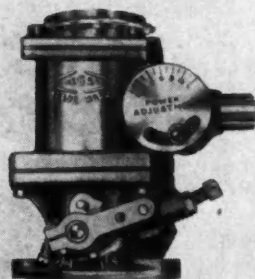
Butane-Propane Carburetor



VERTICAL CARBURETOR
WITH STRAIGHT TYPE
AIRHORN ADAPTER



HORIZONTAL CARBURETOR
WITH STRAIGHT TYPE
AIRHORN ADAPTER



VERTICAL CARBURETOR
WITH DONALDSON TYPE
AIRHORN ADAPTER

ANOTHER important engineering improvement puts ALGAS carburetion equipment far ahead! The new ALGAS 1400 Series Carburetor is now designed with a removable airhorn, eliminating the necessity for changing the air cleaner to fit the carburetor.

Provides Greater Flexibility

Universal design means that each model may be used for a variety of airhorn sizes, either straight or Donaldson type.

Makes Installation Easier

Three principal parts, each entirely separate, make installation a simple matter. Mixer assembly may be rotated into any one of four positions.

Write or wire now
for complete information.

AMERICAN LIQUID GAS CORPORATION

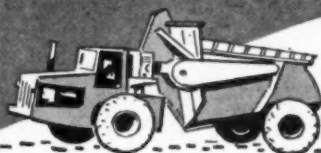
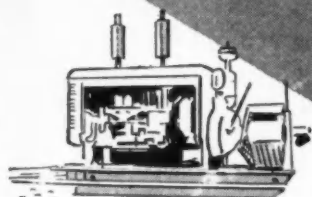
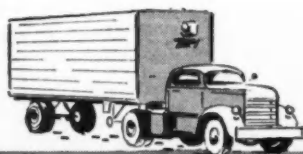
DEPARTMENT M-28
1109 SANTA FE AVENUE
LOS ANGELES 21, CALIFORNIA



"... and while I was giving this glue truck driver a ticket, I seem to recall his helper slipping around the back of the truck."



30,000-FOOT ANSWER TO YOUR GROUND-LEVEL HEADACHE



Look to the sky for the answer to valve troubles on your truck, industrial, and off-the-road engines . . .

The same principles of valve design and fabrication that help make aircraft engines fly higher, faster, and longer between valve overhauls can be applied to your engines.

Sodium-cooled valves operate at lower head temperatures and last hundreds of hours longer without burning . . . Thompson-developed high-heat-resistant alloys prevent untimely warping and distortion of valves. Thompson designs tailor the cooling capacity of the sodium-filled valve to the needs of the engine.

Thompson engineering provides the best valve to handle severe operating conditions. We'd like to explore the adoption of sodium-cooled valves with your engineers.



VALVE DIVISION

Thompson Products, Inc.

EUCLID, OHIO

YOU CAN COUNT ON THOMPSON FOR ENGINEERING LEADERSHIP

Fleet Training Course

Continued from Page 216

says that more than 300,000 trucks are used on Michigan highways.

The course—first of its type in the nation—featured work in every major area of activity engaged in by dispatchers or warehouse foremen. Topics presented included: Routing and scheduling, weight and load regulations, accidents and emergencies, care of cargo and equipment, and

Interstate Commerce Commission regulations.

Beyond those fields, men attending received instruction in such general areas as customer relations, employee relations, job duties, housekeeping, public relations, and cost principles which apply to the transportation field. Those who satisfactorily completed the course requirements received a certificate from the college.

Course sessions were held in the college's Kellogg Center for Continuing Education.



Route your trucks the shortest way every trip. The time and gas used by your drivers looking for unknown streets, driving all around Robinson's barn to make deliveries, will buy a hundred maps like Hearne's Street Map of your city and county area.

Street names are in big, black type, and instantly spotted with Hearne's patented, automatic Street Finder. And every map is mechanically indexed.

Over 100,000 truck owners use Hearne maps every day to give customers better service and cut truck mileage. Many users claim they save the cost of the map in a single day's use.

YOUR CITY MAP FOR 10-DAY FREE TRIAL

Send for cloth, cellophane-finished 44" x 65" map now. Stop delivery waste. Mark routes in crayon we supply. Washes off instantly. Use map for 10 days. Then, if you can get along without it, send it back... or send \$42.50 and it's yours.

MAIL TODAY OR USE YOUR LETTERHEAD

FREE EXAMINATION ORDER FORM

Hearne Brothers (America's Largest Manufacturers of Commercial and School Maps)
23rd Floor, National Bank Bldg., Detroit 26, Michigan.

Without obligation on my part, send me a map of my city and county area. After 10 days' FREE use in my office I'll return the map or remit \$42.50. Prices on cloth, cellophane, spring rollers, stainless steel and labor are going up! Order today!

Your Name _____

Company _____

Address _____

City _____ Zone _____ State _____

1952 SCHEDULE

Fleet Training Courses

- APR. 14-19—University of Michigan, Ann Arbor, Mich., Prof. John C. Kohl
APR. 16-17—Fleet Refresher Course, Pennsylvania State College, State College, Pa., Prof. Amos E. Neyhart
APR. 21-25—Northeastern University, Boston, Mass., Dean Albert Everett
APR. 21-25—University of Tennessee, Knoxville, Tenn., Prof. William Way, Jr.
APR. 21-25—University of Wisconsin, Madison 6, Wis., Prof. Leonard Hillis
MAY 5-9—Driver-trainers, Pennsylvania State College, State College, Pa., Prof. Amos E. Neyhart
MAY 12-16—University of Maryland, College Park, Md., Dean S. S. Steinberg
MAY 19-23—Fleet Maintenance Course, Pennsylvania State College, State College, Pa., Prof. Amos E. Neyhart
MAY 19-23—Rutgers University, New Brunswick, N. Y., Prof. Harry S. Layton
MAY 26-30—Iowa State College, Ames, Iowa, Prof. Marvin Gould
JUNE 9-13—Syracuse University, Syracuse, N. Y., Prof. Burton B. Crandall
JUNE 23-27—Northwestern University, Evanston, Ill., Mr. Gerald O'Connell
SEPT. 15-19—Purdue University, Lafayette, Ind., Mr. Wayne M. Timmons
SEPT. 18-19—Northwestern University, Evanston, Ill., Mr. Gerald O'Connell
SEPT. 22-26—Basic Fleet Course, Pennsylvania State College, State College, Pa., Prof. Amos E. Neyhart
SEPT. 23—Weekly Motor Vehicle Maintenance Supervisors' Course sponsored by PMTA—leader to be announced
SEPT. 29-OCT. 3—University of Minnesota, Minneapolis, Minn., Mr. Fred Berger
OCT. 27-31—University of Illinois, Champaign, Ill., Mr. R. K. Newton
NOV. 10-14—Cleveland College, Cleveland, Ohio, Mr. Kenneth Lawyer
NOV. 13-14—Pennsylvania State College, State College, Pa., Prof. Amos E. Neyhart
NOV. 17-21—University of Virginia, Charlottesville, Va., Dean J. N. Finley

Long-Haul Freight Increases

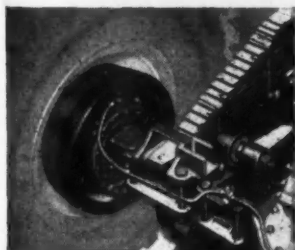
The 65th Annual Report of the Interstate Commerce Commission states that long distance highway transportation of freight is increasing constantly. This ICC conclusion is based, in part, on the following findings.

The average length of haul on the lines of individual Class I intercity motor carriers increased from 177 miles in 1945 to 218 miles in 1949, while the comparable railroad average decreased from 241 to 229 miles. One long-distance motor carrier with an average haul on its own lines of 1573 miles, reported that 52 per cent of its freight moves beyond its lines and another carrier of comparable size reported that 61 per cent is interchange freight.

Standardization of equipment has increased in the past year to facilitate the interchange of trailers, thus permitting the through movement of freight over connecting lines without unloading at the interchange point. It is estimated that between 600 and 800 motor carriers now are engaged in this practice and the number is increasing rapidly.

The Commission notes that the longest hauls are between the midwest and the west coast and that this may be due partly to the fact that the rates of motor carriers on transcontinental traffic generally are lower than rail rates.

Always specify
TDA
BRAKES
 when lives depend on
 faultless performance!



Speed and power in a vehicle call for positive stopping ability—and that means TDA Brakes! The Air Forces crash car shown here is a fine example of a military vehicle built for emergency use at an instant's notice—and providing perfect maneuverability

and control. When vehicle performance can mean the difference between a minor accident and a major tragedy—between life and death—our armed forces don't take chances on equipment that might not get the job done. They insist on vehicles that are tested and proved in every respect. That's why American LaFrance, builders of the crash car shown on this

page, installed the TDA "H" Series hydraulic brake illustrated at left. There are more TDA Brakes in actual use on heavy-duty commercial vehicles than any other make. More than forty years of brake engineering experience have made TDA America's greatest name in brakes!



TIMKEN
Detroit
BRAKES

TDA BRAKE DIVISION
 THE TIMKEN-DETROIT AXLE COMPANY
 ASHTABULA, OHIO



**WHATEVER YOUR BRAKING
 PROBLEM—TAKE IT TO TDA!**

TDA BRAKE DIVISION—DEPT. 7C, ASHTABULA, OHIO
 Please mail brake information on these applications:

NAME _____
 COMPANY _____
 ADDRESS _____
 CITY _____ STATE _____

SERVICE WINNERS REPAIRMEN GO FOR!



When it comes to licking a tough service problem you'll find a Champ-Items Service Winner to help you. There are more than 200 Champ-Items numbers to insure Faster—Better—Safer Service in the repair shop.

**HERE'S A SERVICE WINNER
YOU WILL NEED**



No. 485 Autobody and Trim Screw Assortment, Phillips Head Sheet Metal Type for All Cars and Trucks. These Hardened Screws are used to replace the standard trim and body screws. Assortment is well balanced and contains popular sizes. Packed in strong metal box, 648 screws; 30 different sizes. List 3¢ each.

Write for your copy of supplement of new items for '52 to Champ-Items Catalog No. 500-R.

ORDER FROM YOUR JOBBER



CHAMP-ITEMS, INC.
6191 Maple Ave., St. Louis 14, Mo.

Conference Corner

Continued from Page 6

No matter what causes detonation, we know the effects are destructive to the working parts of the engine, such as pistons, piston pins, piston rings, connecting rod and main bearings and valves. These parts are not designed by the engine manufacturer to withstand pressures a great deal in excess of those encountered under normal operating conditions. Therefore the strength of the material at high temperatures is exceeded and either a hole blows through the piston head or it breaks off.

Detonation may result from an erratic, uneven burning of the fuel. Certain fuels start to burn normally and then explode violently. This is experienced mostly where a low grade of fuel is used in conjunction with a high grade fuel ignition setting. The detonation in the combustion chamber usually starts at a point opposite the initial ignition.

It is imperative that service men today have available the specifications of the distributor used, showing both the mechanical and vacuum advance throughout the speed range of the unit. This is important, for there is a wide difference in the characteristics of ignition systems in use.

With the specifications thoroughly understood, the distributor must be adjusted on a syncroscope testing unit that makes possible the operation of the distributor throughout its entire speed and vacuum range.

After the distributor has been thoroughly checked and all necessary corrections made, it is returned to the engine. The use of a stroboscopic timing light will then prove very effective in setting the distributor to the exact factory specification.

A test under actual operating conditions is next, and the final setting is accomplished by use of the octane selector. It must be understood that not all engines will perform properly with medium octane fuel. Some must be operated on the highest octane fuel in order to achieve their rated performance and economy. The final adjustment must be made with the type of fuel that will be regularly used, for if it is made with the assumption of high octane fuel being used, reverting to low octane fuel will have disastrous results.

In conclusion it is quite obvious that service men today must have the necessary equipment for checking and correcting the various causes of engine troubles. Many cases of unsatisfactory engine operation are due entirely to lack of adequate equipment.

Budd Wheel Distributors provide the same service described in this advertisement

AKRON—Motor Rim Manufacturers Co.
ALBANY—Wheels, Incorporated
ALBUQUERQUE—Wheels & Brakes, Inc.
ATLANTA—Harris Automotive Service, Inc.
BALTIMORE—R. W. Norris & Sons, Inc.
BIRMINGHAM—Wheel, Rim & Parts Co.
BOSTON—New England Wheel & Rim Co.
BUFFALO—Frey, the Wheelman, Inc.



CHARLOTTE—Carolina Rim & Wheel Co.
CHICAGO—Stone Wheel, Inc.
CINCINNATI—Rim & Wheel Service, Inc.
CLEVELAND—Motor Rim Manufacturers Co.
COLUMBUS—Hayes Wheel & Spring Service
DALLAS—Southwest Wheel, Inc.
DAVENPORT—Stone Wheel, Inc.
DAYTON—Rim & Wheel Service, Inc.
DENVER—Quinn & McGill Motor Supply Co.
DES MOINES—Des Moines Wheel & Rim Co.
DETROIT—H. & H. Wheel Service, Inc.
EVANSVILLE—Auto Wheel & Rim Service Co., Inc.
FARGO—Wheel Service Company
FORT WAYNE—Wheel & Rim Sales Co.
GRAND RAPIDS—Rim & Wheel Service Co.
HARRISBURG—Standard Rim & Wheel Co.
HARTFORD—Connecticut Wheel & Rim Co.
HOUSTON—Southwest Wheel & Equipment
INDIANAPOLIS—Indians Wheel & Rim Co.
JACKSONVILLE—Southeast Wheel & Rim Co.
KANSAS CITY—Borbein, Young & Co.
KNOXVILLE—Harris Automotive Service, Inc.
LOS ANGELES—Wheel Industries, Inc.
LOUISVILLE—Auto Wheel & Rim Service
MEMPHIS—Beller Wheel, Brake & Supply Co.
MILWAUKEE—Stone Manufacturing Co.
MOLINE—Mutual Wheel Co.
NASHVILLE—Beller Wheel, Brake & Supply Co.
NEWARK—Automotive Safety Inc.
NEW HAVEN—Connecticut Wheel & Rim Co.
NEW ORLEANS—Southern Wheel & Rim Co.
NEW YORK—Wheels, Incorporated
OKLAHOMA CITY—Southwest Wheel, Inc.
OMAHA—Morgan Wheel & Equipment Co., Inc.
PEORIA—Peoria Wheel & Rim Co.
PHILADELPHIA—Thomas Wheel & Rim Co., Inc.
PITTSBURGH—Wheel & Rim Sales Co.
PORTLAND—Six Robbles', Inc.
PROVIDENCE—New England Wheel & Rim Company
RALEIGH—Carolina Rim & Wheel Co.
RICHMOND—Dixie Wheel Co., Inc.
ROCHESTER—Frey, the Wheelman, Inc.
SALT LAKE CITY—Henderson Rim & Wheel Service
SAN ANTONIO—Southwest Wheel & Equipment
SAN FRANCISCO—Wheel Industries, Inc.
SEATTLE—Six Robbles', Inc.
SOUTH BEND—Wire & Disc Wheel Sales & Service
SPOKANE—Bearing & Rim Supply Co.
SPRINGFIELD, ILL.—Illinois Wheel & Brake Co.
SPRINGFIELD, MO.—Borbein, Young & Co.
ST. LOUIS—Borbein, Young & Co.
ST. PAUL—Wheel Service Co.
SYRACUSE—Colbourn Wheel & Rim Service, Inc.
TACOMA—Six Robbles', Inc.
TOLEDO—Wheel & Rim Sales Co.
WICHITA—Borbein, Young & Co.
WINSTON-SALEM—United-Automotive Service

EXPORT

CLEVELAND—C. O. Brandes, Inc.

CANADA

CALGARY—Fisk Tire Service Ltd.
EDMONTON—Alberta Wheel Distributors, Ltd.
MONTREAL—Auto Wheels & Supplies, Ltd.
TORONTO—Wheel & Rim Co. of Canada, Ltd.
VANCOUVER—Wheels & Equipment, Ltd.
WINNIPEG—Fl. Garry Tire Service Ltd.



• BETTER DAYS FOR HAULAWAYS!

Western Auto Transports, Inc., of Denver, haul automobiles from Detroit as far west as Los Angeles, operating 160 units.

With top-heavy loads in one direction, and return trips empty, they were plagued with premature side wall and bead failure, excessive wheel breakage and splitting of rim flanges.

George Huck, their Maintenance Superintendent, took his troubles to Tom Porter, salesman for Quinn & McGill Motor Supply Company, who are distributors for Budd wheels in Denver. Tom recommended a changeover to Budd advanced wheels with heavy duty discs, with the result that tire and wheel maintenance costs have been cut about 75%, and tire mileage extended at least 25%. Half of the fleet has been converted and the rest are being changed as rapidly as possible.

Shows what can happen when you know what to do and have exactly the right wheel to do it. That's your Budd distributor.

Having wheel trouble? See your Budd distributor. Not having wheel trouble? See your Budd distributor. Those tires of yours may have a lot more miles in them than you suspect, mounted on a different wheel. Anyway, it costs nothing to find out.

The Budd Company, Detroit 14



GENUINE

Budd

COLD TAPERED DISC

WHEEL

*Specify and standardize
on Budd Wheels*



Highway Project Gains in Support

Committee elected to steer
national good - roads drive

Highway transportation leaders elected these men as members of a steering committee for the Project Adequate Roads campaign. They are (seated—left) Arthur M. Hill, Greyhound; Albert Bradley, General Motors; (standing—left to right) Arthur C. Butler, National Highway Users Conference; Paul Reinhold, American Road Builders Assn.; and L. S. Wescoat, Pure Oil Co.

THE "first nationwide good roads movement in more than a quarter of a century" has been launched by executives of 40 national organizations representing millions of owners of motor vehicles, as well as automotive and allied industries.

Meeting here at the University Club in New York, the transportation leaders organized a Project-Adequate Roads committee, or National PAR Committee. The stated purpose of the new organization is to arouse public action to get the nation out of the traffic muddle. The movement was compared in scope to the "Out of the Mud" campaign of the 1920's.

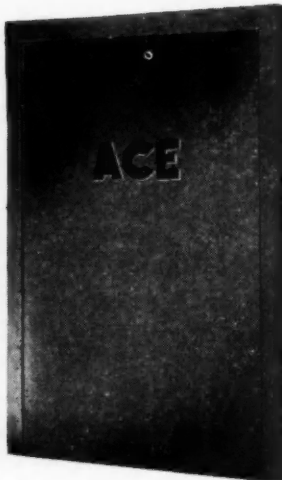
Acting as the organization's temporary operating committee will be Paul B. Reinhold, President of the American Road Builders Assn.; L. S. Wescoat, President of the Pure Oil Co. and chairman of the American Petroleum Institute; Albert Bradley, executive vice president of General

(TURN TO PAGE 226, PLEASE)



TRUCK FENDER FLAPS

TRUCKER ENGINEERED — LAST LONGER
Meet all state requirements — Used by leading fleets



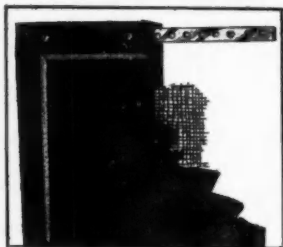
Note the tapered design, illustrated in cross-section, side view. Tapering distributes flexing action and prolongs life of flaps. Tapered reinforcement rib, top and sides, gives maximum "wind bend" resistance. Bottom has "slip edge"—no rib to hold mud or ice.

At Better Distributors Everywhere

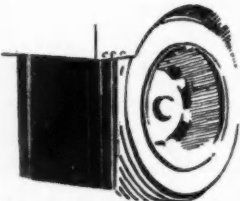
ACE RUBBER PRODUCTS, INC.

100 Beech Street

Akron 8, Ohio

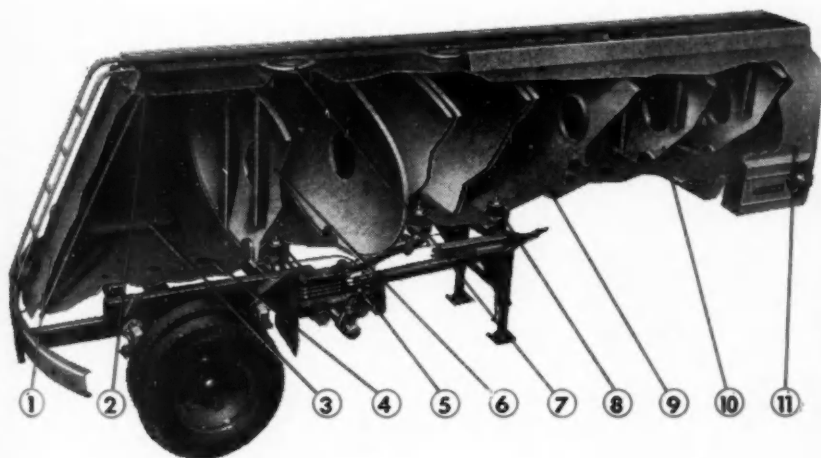


14 gauge perforated steel strip molded into top as anchor bar • Rubber, molded through perforations, bonds steel securely in place, can't slip • All flaps molded of quality rubber, impregnated with chopped tire cord • Optionally available with reinforcing sheet of strong fabric between layers of rubber, full length and width.



"Where to?"

Refiners has 207 operating units and 18 terminals in Michigan, Ohio, Indiana, and Illinois. The company hauls petroleum products, chemicals, paints, glues, and other liquids.



- ① HIGH-TENSILE STEEL THROUGHOUT
- ② SAFETY-TREAD WALKWAY WITH DRAINS THROUGH TANK
- ③ WHEEL WELLS FOR EXCEPTIONALLY LOW MOUNTING OF TANK
- ④ DEEP SUMPS FOR TOTAL DRAINAGE
- ⑤ FAST-FLOWING, COMMON HEADER TYPE MANIFOLD
- ⑥ LOAD-CARRYING BULKHEADS AND BAFFLEHEADS REINFORCED
- ⑦ SAFETY MANHOLES WITH PRESSURE-RELIEF VALVES
- ⑧ EMERGENCY VALVES
- ⑨ GRADUALLY SLOPED TRANSITION SHEET
- ⑩ DEEP-DISHED BULKHEADS AND BAFFLEHEADS
- ⑪ OVEN-BAKED FINISH



**IMMEDIATE
SERVICE
Wherever Your
Fruehauf Goes!**



World's Largest Builders of Truck-Trailers
FRUEHAUF TRAILER COMPANY
Detroit 32, Michigan



PRINTING INK

**WORLD'S WIDEST
CHOICE OF TANK-TRAILERS
— FOR EVERY
LIQUID HAULING JOB!**



SULPHURIC ACID



PROPANE AND BUTANE



MILK

Highway Project Gains

Continued from Page 222

Motors and chairman of the National Highway Users Conference, and in an ex officio capacity, Arthur M. Hill, chairman of the executive committee of the Greyhound Corporation and president of the National Association of Motor Bus Operators. Mr. Hill will serve as temporary chairman of the PAR organization until its next meeting, to be held in conjunction with the Fourth Highway Transportation Congress meeting in Washington, D. C., May 6, 7 and 8. Arthur C. Butler, director of the National Highway Users Conference, was elected permanent secretary of the National PAR organization.

Albert Bradley, Chairman of NHUC which initiated formation of the committee, said the group's first concern will be to urge defense officials to a new viewpoint of the highway's place in the nation's defense. Mr. Bradley said highway improvement is as indispensable to our de-

fense effort as "armaments, power or other primary elements." He said further that in many cases, defense officials seem to have taken the position that highways are "expendable" and that this attitude is reflected in meager allocations of scarce materials needed for highways.

The Committee's other major concern is of a long-range character. According to spokesmen, it will be to stimulate continuing activity in highway improvement so as to "put the nation's highways on a 'PAR' with the nation's needs."

The NHUC Chairman emphasized that the organization made possible a unity of effort, without placing restrictions on the individual policies or action of participating groups. He said that the functions of the committee would be: to stimulate efforts for highway improvement to meet current and continuing needs; to act as a clearing house for engineering and highway legislation information; and, in particular, to provide information to the public largely through the use of the advertising and public relations departments of participating groups.

Commenting on the PAR program Mr. Wescoat said: "With proper support at the state level PAR can achieve adequate roads within a reasonable time at tax rates which are warranted and fair. Mr. Hill expected that the PAR Committees would shortly appear in states, counties and even municipalities. "People are aware of these conditions in a general way, already," he said. "But there must be wider understanding of the need and of what can be done to meet it."

For its long-range concern of stimulating continuing road programs in all the states, the National PAR Committee will look to the Sufficiency Ratings system. Sufficiency Ratings are a new mechanism for determining accurately relative road needs, as a means of establishing priorities and as a basis for programming. Included in PAR's stated objectives was the obtaining of proper classification of roads into systems, funds for adequate highway systems, the dedication of highway use taxes to highway purposes, fair distribution of highway costs, and improved highway administration.



Blue Streak on the box means Best in Ignition



If you have a little trouble these days getting a particular Blue Streak ignition part, don't blame your jobber; blame our chief engineer. Because if a shipment of raw material isn't premium grade, he just won't use it; even if there's a pile of telegrams in the front office this high from customers who are howling for their orders. But when you do get it, and it says "Blue Streak"—mister, you know you've got the real thing, the McCoy. STANDARD MOTOR PRODUCTS, INC., Long Island City 1, New York.

Mr. Jos
press, Po
mins Di
and Sou
Spokane
the year
motor oi
average
operatin
summer
"Insp
285,163



Los An
Union
New Yo
4904 R

COMMER

Oregon Fleet Owner Recommends:

"...T5X Lubrication for Extremes of Weather and Service."



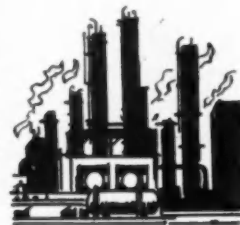
Mr. Joseph M. Exley, president of Exley Produce Express, Portland, Ore., writes: "We are operating 32 Cummins Diesel-equipped produce trucks from the Arizona and Southern California area to Seattle, Portland, Spokane, and other Northwest points on heavy schedules the year around. For the past 6 years we have used T5X motor oil exclusively in our equipment. These units will average 4,000 to 6,000 miles between oil changes... operating in temperatures ranging from 118° F. in the summer to 40° F. below zero in the winter.

"Inspection of a motor recently overhauled after 285,163 miles indicated very little evidence of wear on pistons, sleeves and bearings and the entire motor was exceptionally clean."

Outstanding performance records of this sort are possible with T5X because this amazing



purple oil is made from the finest base stocks that modern refinery equipment can produce. Special-purpose compounds have been added to these superior base stocks to give you an oil that is unexcelled in heavy-duty lubricating characteristics.



Mr. Exley concludes: "We sincerely recommend T5X motor oil for use in equipment where extremes of weather and service are encountered." T5X is specifically designed to do an outstanding job under *any* operating condition, no matter how severe. If you want fewer breakdowns and lower maintenance costs, give T5X a trial in your engines operating under critical conditions.

Developed by the manufacturers of UNOBA—the industry's original multi-purpose grease.

OFFICES

LOS ANGELES
Union Oil Building
NEW YORK
4904 R C A Building

NEW ORLEANS—917 National
Bank of Commerce Building
CHICAGO
1612 Bankers Building

COMMERCIAL CAR JOURNAL, April, 1952



UNION OIL COMPANY

OF CALIFORNIA

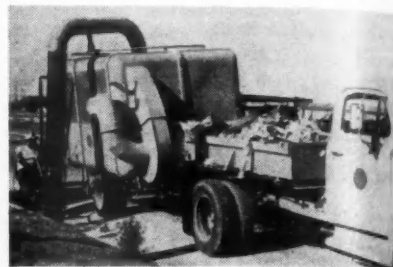
Vacuum Cleaner Gathers Highway Trash

THE problem of how to keep suburban roadsides from looking like a public refuse dump has been solved by the California highway district shops at Los Angeles. They have

made two major changes in a leaf-collecting unit made by Good Roads Machinery Co., Minerva, Ohio.

The "Leaf and Litter Collector" is operated like a large vacuum cleaner.

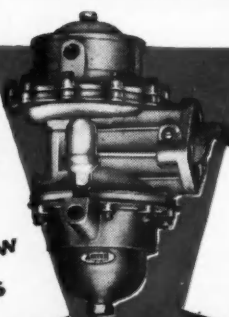
It is mounted on a four-wheel trailer frame and may be towed by any construction-type truck. On first trials it was found to have enough suction power to pick up bottles, cans or



AIRTEX Exclusive Core Credit Policy

Extra Profit!

All old fuel pump cores worth \$\$\$\$\$\$ on trade-in for new Airtex pumps



Extra Appeal!

Enables you to offer special bonus to car owners

TURN IN YOUR
JUNK FUEL PUMPS TODAY AS
TRADE-INS ON NEW AIRTEX FUEL PUMPS

AIRTEX AUTOMOTIVE DIVISION

FAIRFIELD, ILL.

World's Largest Independent Fuel Pump Manufacturer

metal particles all of which were relatively heavy. The highway men discovered, however, that since the collector had been designed to pick up leaves, that all of the roadside material went through the suction fans, pulverizing bottles, cans, even half-gallon jugs.

It was soon evident to W. D. Sedgwick, assistant district engineer, that the fan could not stand up under the battering that thousands of bottles and cans could give it. So he gave the shop men the job of making some kind of adaptation.

Directed by foreman George Siebert, they first fastened the 10-in. suction hose to the upper end of an old hot water boiler, which in turn was welded to a bracket above the fan. A rectangular air-tight box was built into the body at the rear opening of the cleaner. Heavy particles picked up by the hose were then carried beyond the fan blades into this box. The lighter material was drawn through the fan and deposited in the remainder of the interior which functioned similar to a dirt bag on a household cleaner.

This adaptation caused a suction loss, so the shop then put in a larger fan, and made the hose pipe connections on a curve to eliminate friction. A seat was rigged to the right rear corner of the cleaner body. From this the hose operator controls the movement of the hose with a handle bar which swivels in a ball and socket joint. An electric button at the side of the seat connects to a buzzer in the cab, by which the hose operator may signal the truck driver.

The unit was given a final test run over a particularly dirty section of California highway. It picked up 150 cu yd of trash, equal to about 12 full loads in the three-day test period.

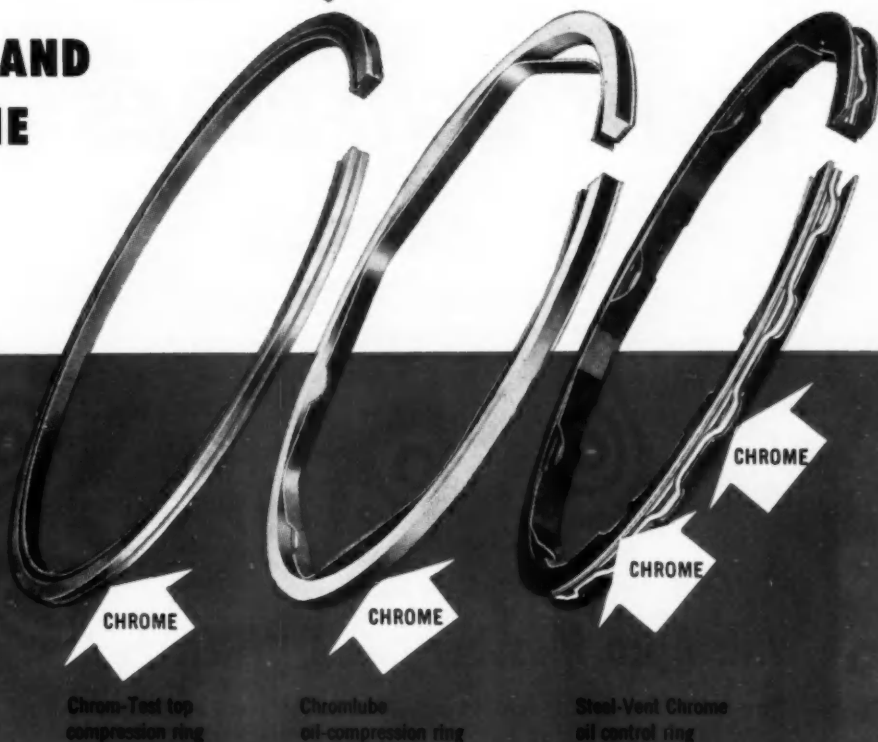
HASTINGS CHROME SETS

are Motor Engineered

**FOR EACH MAKE AND
MODEL OF ENGINE**

Patented

Hastings Chrome rings are
covered by the following
patents: U. S. Patent
Nos. 2,565,042; 2,554,289
and 2,580,124



There's no guesswork, no confusion when you specify Hastings Chrome Sets. They're Motor Engineered to give you the right combination in any engine. In every Motor Engineered combination, Hastings uses chrome where experience has shown *it does the most good*. So when you get a Hastings Chrome Set, you can be sure it has been designed to do the very best job in that particular engine—regardless of the number of chrome rings in the set or their location on the pistons.

HASTINGS MOTOR ENGINEERING gives you specific ring types and ring combinations for specific engines. Each set is individually Motor Engineered to the operating characteristics of one particular engine.

ALL HASTINGS HEAVY-DUTY SETS are Chrome Sets. For more than five years, Hastings has supplied the best chrome combination for trucks, buses and tractors operating under all conditions. Thousands of installations prove it!

HASTINGS PROVIDES FULL COVERAGE in chrome sets for passenger cars, too—to cover every service need, every engine and operating condition.

TOUGH BUT ON SO GENTLE

HASTINGS MANUFACTURING COMPANY, Hastings, Michigan • HASTINGS LTD., Toronto
Piston Rings • Spark Plugs • Oil Filters • Casite • Drout



HASTINGS

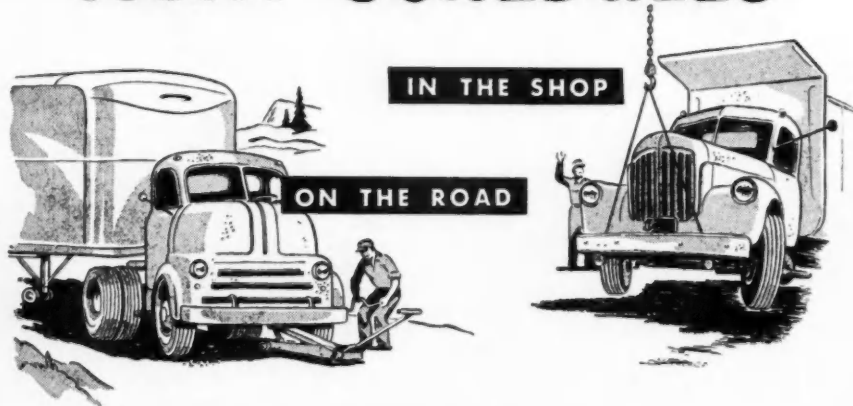
STEEL-VENT PISTON RINGS

RIGHT FOR RE-BORE ★ RE-RING ★ RE-SLEEVE

Michigan Association Trains Drivers

Fleets send drivers to three-day school to bone up on
safety, fire control, equipment care, freight handling

TIGHT SCHEDULES



Call for Quick Changes with Apco Mossberg RIM WRENCHES

Emergency repair kits and shop tool cribs equipped with Apco Mossberg rim wrenches are your best protection against costly delays in fleet tire changes. There's no time lost locating the right wrench . . . no need for inadequate substitutes.

Available in three popular styles—(1) Two-Piece (2) Four-Way (3) Brace—Apco rim wrenches are steel forged and perfectly balanced to assure maximum overall strength. Extra deep sockets provide a safe, sure grip . . . longer handles add greater leverage, allow sufficient clearance to work on wire wheels and deep hubs with ease.

Don't let time-consuming tire changes hamper your road or shop schedules. Equip your fleet with Apco Mossberg truck wrenches and service tools. Ask your jobber or write direct for catalog and prices on our complete line.



APCO MOSSBERG CO.

187 LAMB STREET, ATTLEBORO, MASS.

THERE has been a great deal of attention in the trucking industry to driver training in recent years. However, practically all of it has been directed at the new or inexperienced driver without too much thought to keeping the older hands up to date on the fine points of the business.

For the past several years, the Michigan Trucking Association has recognized the need for "post graduate" driver training and has operated a drivers' refresher course. This course runs regularly three days a month for ten months a year at Detroit.



Basically the course has two objectives: (1) To refresh the driver's mind on state, Federal, and municipal laws and company rules, and to acquaint him with any regulations with which he is not familiar; and (2) to establish in his mind the importance of his job and his services to his employer and the public. Originally, the course was designed for use by individual member companies of MTA. It soon became apparent that such individual treatment was not working out too well so a central school was set up in Detroit for the benefit of all members who wish to send drivers. The course is under the direction of John Cross, safety director for MTA and the only full-time safety official employed by any state trucking association.

The course runs three days of eight hours each, with a 10-minute recess out of each hour and one hour out for lunch. Drivers are assigned by their employers to take the course and are paid regular wages for the time spent in the classroom, in addition to actual expenses if they are from out of town.

An important point in the program is that it is not a "penalty" course for drivers who have violated rules or have been guilty of infractions of traffic laws, although some of the

deal of industry to How. as been experienced ought to date on .s, the ion has gradu- s oper- e. This days a year at

drivers taking the course have been assigned there because of a demonstrated need for further training. On the whole, however, it is designed for experienced drivers whom their employers feel can benefit from being brought up to date on the latest rules, regulations and other information available.

Selection of drivers varies greatly between companies, with some going down the seniority list and others using different bases of selection.

What the Course Is Like

UPON enrolling, the "students" are first given a thorough explanation of the course, followed by an attitude test. A top management representative presents the company's viewpoint of what is important, including such points as knowledge of company rules, driver's attitude, the relationship between carrier and customer, and appearance as indicated by such factors as clean, neat uniforms, courteous conduct, and physical condition as affected by proper rest and diet.

Next comes a session on handling freight, usually conducted by someone from the State Freight Claim Division and covering freight as handled by common and contract carriers, proper handling of bills of lading, delivery bills, C.O.D. shipments, pickups, and similar items.

The afternoon session is devoted to accidents and their causes and usually is conducted by a safety engineer from an insurance company. His discussion covers such points as traffic and compensation accidents, the relation of insurance costs to accidents, proper accident reporting, and a discussion by the class of various types of accidents.

The balance of the first day is given over to conservation of equipment and the driver's role is in keeping his equipment operating properly with a minimum of breakdowns due to improper handling. The session is handled by an experienced maintenance superintendent and includes discussions of the engine, clutch, running gear, brakes, tires, electrical system, lubrication, and cooling system. The general idea is to give the driver an understanding of the functions of the mechanical components of his vehicle.

The second day starts off with a course in first aid and is generally

handled by a Red Cross instructor, who deals with what to do and not to do at the scene of an accident, how to handle various types of injuries, dealing with shock, transportation of accident victims with fractures or head injuries, and artificial respiration. The balance of the second day is given over to psycho-physical tests. They cover visual acuity, field of vision, night vision, depth of perception, color vision, eye dominance, steadiness, and reaction behind the wheel.

The last day of the course starts with driving regulations and rules of the road, covering three main points: (a) ICC safety regulations (b) state and local safety and traffic laws; and (c) check stations, routes, etc. These subjects are handled by the district ICC inspector, a city police or state highway patrol officer and an operations supervisor or manager of a truck company, respectively.

An interesting point here is that at the beginning of the course drivers (TURN TO PAGE 234, PLEASE)

...now that equipment
must be made to
last longer...

install **HOOF GOVERNORS**

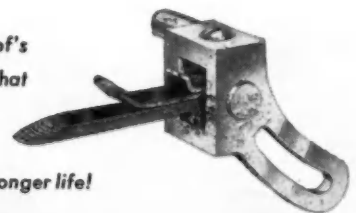
on your fleet,
and watch
your
vehicle life
S-T-R-E-T-C-H



Hoof Governors *make sure* that your vehicles are driven at the speed you want—they prevent excessive engine racing in intermediate gears, reduce operation costs and substantially increase the interval between overhauls! Now, more than ever, the economies of Hoof operation warrant your full attention. Write us for facts!



No other Governor has Hoof's patented Cantilever Spring that means more accurate speed control, simplified construction and longer life!



HOOF PRODUCTS CO. 6543 So. Laramie Ave., Chicago 38, Ill.



SUN
makes it easier
for you



...to cut ton-mile costs!

Experiences like these prove the value of sun Diagnosis Equipment in reducing ton-mile costs and maintenance costs:

- "50% savings—gas mileage increased from 4 to 6 miles per gallon."
—large Dairy Company
- "One and a half miles per gallon increase on 200 cars."
—Car Rental Agency
- "Saved over \$5,000 per month on labor costs on 800 vehicles."
—large Trucking Company
- "Sun Equipment paid for itself in 60-day trial."
—Bus Operator

Whether you service your own equipment or not, SUN will gladly demonstrate how fleets of your size and type are cutting ton-mile costs and increasing profits with a SUN Diagnosis Plan. Tell us how many vehicles you operate and the type of service. We will work out a SUN Diagnosis Plan for you that can reduce your operating and maintenance costs.



SUN ELECTRIC CORPORATION 6359 AVONDALE AVENUE CHICAGO 31, ILLINOIS

"Unbelievable!..."

you think?

Perhaps some fleet operators will find the savings quoted in this advertisement a little better than might be expected...

...but

SUN proved it!

The quoted statements are actual experiences of fleet operators using SUN Diagnosis Equipment. SUN Representatives will gladly show you proof in the form of case histories and letters from the fleet operators involved. These reductions in ton-mile costs and maintenance costs were made through the use of a SUN Diagnosis Program. This same Program will work for you, regardless of the size or scope of your operation. Without obligation, SUN will show you what a SUN Diagnosis Program will do for you in dollars and cents. Fill in the coupon below and mail TODAY!

SUN ELECTRIC CORPORATION
6359 Avondale Ave., Chicago 31, Ill.

We would like to have full details on a SUN Diagnosis Program especially designed to fit our type of operation and a survey showing what we could expect in the way of maintenance savings.

No. of vehicles.....

Type of vehicles.....

Type of Operation ☐ Long Distance Hauling ☐ Local Hauling ☐ Stop-and-Go Delivery ☐ Rental ☐ Cab ☐ Service (Utilities, insurance, sales, police, etc.)

Service cost per vehicle averages about \$.....per year. We (have) (have not) our own service shop. No. of mechanics.....

NAME.....

TITLE.....

COMPANY.....

ADDRESS.....

CITY.....ZONE.....STATE.....

R-5855-R2

Drivers Trained

Continued from Page 231

are given a pre-test on traffic laws. At the close of the course they are given the same examination. Class average for the pre-course test runs about 55 to 58 per cent. After instruction, however, the post-course test shows an average of 85 to 86 per cent.

During the afternoon of the third day, discussion is devoted to preven-

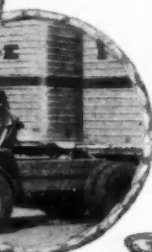
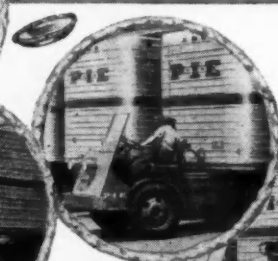
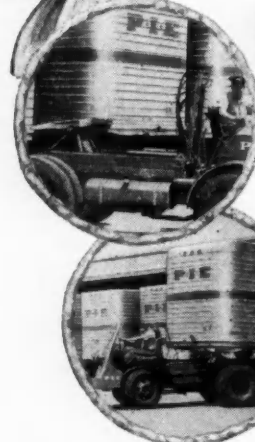
tion and control of petroleum fires. This session is handled by a city or state fire marshall or a safety director for a petroleum carrier. It deals with causes of truck fires, gasoline as a fuel or cargo, causes of gasoline fires, misuse of gasoline, principles and types of fire extinguishers and a demonstration of how to extinguish fires.

The balance of the day is given over to a general review of the program including class discussions, questions and answers, and finally a comprehensive 50-question written

examination on all subjects covered in the program. All results of tests taken by the drivers, including the psycho-physical and attitude tests, are returned to the employer and are kept in the driver's file.

Formerly a session was devoted to field problems, but has been dropped because it was felt that drivers actually were not getting enough out of it to warrant its continuance. Also it was felt that more would be gained by concentrating on classroom instructions than from driving practice in dock approach, maneuvering and other primarily mechanical functions of truck driving.

"Easy as P-I-E with our Speedy BARTLETT HYDRAULIC 5th WHEEL"



The NEW IMPROVED Hydraulic Lifting 5th Wheel Eliminates Cranking While Spotting—Cab Controlled. No Climbing In and Out of Cabs — Cuts Spotting Time to 1/3

Does the Work of an Extra Man!



Lifts Supports 14 inches Off the Ground Takes the Hard Work Out of Spotting Makes Possible Closer Docking of Trailers HUNDREDS OF USERS FULLY RECOMMEND THEM!

These Units Shipped Anywhere for Local Installation on Any Make of Tractor

BARTLETT TRAILER CORPORATION

3080 ARCHER AVE. • CORNER OF ASHLAND • CHICAGO 8 • VIRGINIA 7-1160

MTA COMMERCIAL DRIVER'S REFRESHER COURSE
 CONDUCTED BY THE MICHIGAN TRUCKING ASSOCIATION'S SAFETY DIVISION
 This Certificate is awarded to _____ of _____
 for having successfully completed the course.
 Issued at _____, Michigan, this _____ day of _____, 195____
 Managing Director _____ Safety Supervisor _____

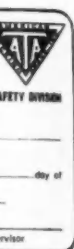
Driver Gets Certificate

UPON completion of the course the driver receives a certificate showing he has successfully completed the instruction together with a card which he can carry with him at all times, which also certifies that he has completed the course. Reaction of drivers upon being selected to take the course varies considerably. Some are happy to take advantage of it; whereas others at first are inclined to be resentful, as a reflection on their competence. However, instructors are careful at the outset to explain that the objective is not to make good drivers out of bad ones, but to make already good, experienced drivers even better.

The course is one that can easily be adapted to other state associations or to individual companies. Very little is required in the way of equipment, consisting primarily of company rule books, safety literature and posters, slide films and movies, worn and damaged truck parts, standard FCC equipment such as flares, fuses, etc., and road signs. Classroom space has been donated by the city of Detroit for the MTA course in one of the municipal buildings, and similar cooperation probably would be available to other organizations seeking to establish such a course.

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April, 1952

I'm gonna use it
so I oughta choose it . . .

give me a
Hein-Werner
every time!

You can't beat a Hein-Werner Hydraulic Jack for *performance* . . . It's powerful . . . It's fast, easy and safe to operate . . . Factory tested at $1\frac{1}{2}$ times rated capacity.

And—the price is so moderate that there is no good reason why a truck driver shouldn't get to use the jack of his choice—a new HEIN-WERNER.

Made in models of 3, 5, 8, 12, 20, 30, 50 and 100-tons capacity. Complete H-W line also includes "Bumper-Lift" Jacks for passenger cars, "Swift-Lift" and Service Jacks for shop use, and "Push and Pull" Hydraulic Jacks for body, fender and frame work.

Ask your jobber or write us for details



MODEL E12 9-A
12 TON

HEIN-WERNER CORPORATION • Waukesha, Wis.

COMMERCIAL CAR JOURNAL, April, 1952



MAINTENANCE
REPORT



"PETE" PETERSON



Proof! All mechanics say the pressed-in seat looks like this before they start to grind it.

HOW MUCH PRESS-FIT

Should Be Used in Replacing
Pressed-in Valve Seats?

"NO ONE KNOWS" . . .

says "Pete" Peterson: Throughout the country maintenance men and engineers *disagree* on proper press-fit tolerances for any specific job. The amount of press-fit to use cannot be determined accurately . . .

BECAUSE . . .

(1) Engine operating conditions vary. (2) Liming conditions in water jackets of engines vary. (3) Different wall thicknesses around the seat cause varying amounts of distortion and expansion in the cylinder head or block. (4) Difference from new engine clearances cause different engine operating temperatures.

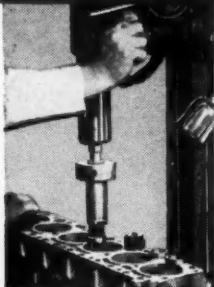
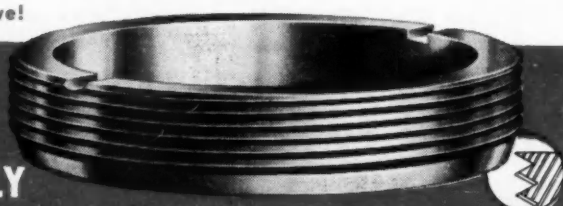
Stays Round — Cools Valve!

Made of tough chrome-nickel-iron, individually cast under pressure. Unlike pressed-in seats, P-B Screw-In Valve Seats retain their original dimensions, won't buckle and come loose, can't tilt and cause hot spots and valve burning, and allow for perfect seating of valve on every stroke.

ONLY

THE **P-B**

SCREW-IN VALVE SEAT
WITH EXPANSION CLEARANCE



P-B drill press unit for production installation. Also available HEAVY DUTY PORTABLE unit for jobs in or out of chassis—up to Diesel locomotives.

Takes the GUESSWORK Out of Valve Seat Replacement!

- 1 An exact *predetermined* expansion clearance is machined in between the threads of the P-B Screw-In valve seat.
- 2 P-B's precision tooling makes the only precision counterbore in the replacement field. Non-adjustable end-mill cutters allow no variation in predetermined clearances.
- 3 Over 75% of the major fleets and bus lines in Canada have used this seat for over 12 years.

AMAZING PERFORMANCE

SAVES COSTLY BREAKDOWNS—Eliminates 75% of valve burning, sticking and breakage. Also eliminates 75% of valve port cracks due to radial pressure of expanding pressed-in seats—or valve port cracks in many heads where no seats are used.

REPLACEMENT OF SEATS MANY TIMES—WITHOUT OVERSIZE—You can replace P-B seats without damaging the threads in counterbore or going to an oversize.

NEW-ENGINE VALVE MILEAGE—And the seat remains tight in the counterbore.

EASY TO REGRIND—After long service just a light touch with the grinding stone cleans it up because it is not out of round.

CONTACT YOUR MASTER SHOP TODAY!

P-B Master Shops are now located in every major city in the U. S., ready to help you solve your toughest valve maintenance problems. Or write for further information:



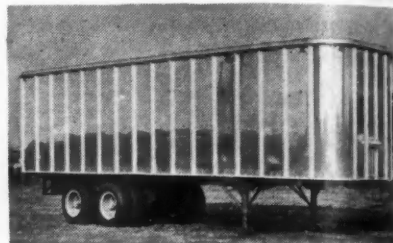
SCREW-IN SEAT WITH
EXPANSION CLEARANCE

PETERSON WELDING LABS., INC.

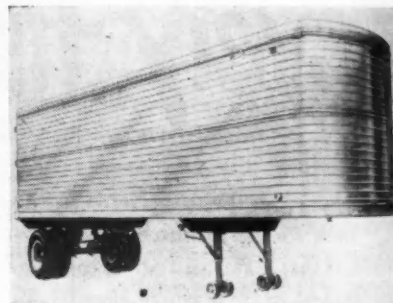
Dept. C-4 1423 Virginia Kansas City, Missouri

Kingham Announces Two New Trailers

TWO new light-weight trailers have been introduced by Kingham Trailer Co., Louisville, Ky.



The exterior post combination van shown above uses Hi-Ten steel in its running gear. The 5th wheel plate, a number of cross-sills, and the rear bumper are the only other steel parts in the unit. All other parts are aluminum, using the alloy best suited to each individual application. The unit shown is a 30-ft single axle job which weighs 6650 lb.



The exterior-skin unit shown here is corrugated horizontally. The manufacturer states that the unit is completely aluminum with the exception of the axles and spring assemblies. Both of these units are equipped with Kingham 5 in. axles, aluminum wheels, silico-manganese springs with steel spring hangers, aluminum landing gear and a standard SAE king pin. They are available in lengths from 30 ft to 34 ft and an inside width of 90 in. with 84 in. height. Weight of the units with 30 ft single axle and 10:00 x 20 is 6650 lb.

Conspiracy

FOR LONG YEARS I WAS TAUGHT TO BE THRIFTY AND THE PREACHMENTS WERE BACKED UP WITH FACTS.

SO I PRACTICED THE MUCH LAUDED VIRTUE THE RESULT? I PAY MORE INCOME TAX.

—Omer Heary

the ASF safety 5th wheel



From coast to coast, throughout the U. S. and into Canada, Aero Mayflower operates a famous fleet of units like this—now using ASF 5th Wheels exclusively.

"maintenance costs? ... one 50¢ shim!"



F. J. Grumme

In two years, according to Fred J. Grumme* of Aero Mayflower, they have installed ASF Safety 5th Wheels on 250 of their tractors. "Our only expense," Mr. Grumme says, "has been one 50¢ shim. Our men always must have the safest and best equipment, and we are doubly pleased when it is also the most economical."

ASF Safety 5th Wheels are built of alloy cast steel, the same kind that ASF uses in commercial castings subject to high stress and strain. Also, the ASF Wheel provides a snug king-pin fit and has a larger area of contact between pulling jaws and king-pin than any other 5th wheel. But instead of costly rebuilding when parts wear, as all

metal parts must, the fleet owner inserts one or two ASF shims and the coupler is ready for more thousands of miles of slack-proof service.

Ask your nearest ASF distributor for the complete story of America's toughest and safest... the ASF Safety 5th Wheel. And send for additional information and specifications. American Steel Foundries, Automotive Division, 410 N. Michigan Ave., Chicago 11, Ill.

*Vice President in charge of Equipment Maintenance,
Aero Mayflower Transit Co., Indianapolis, Ind.

ASF safety 5th wheels

Cause	Per Cent of Accidents	Per Cent of Cost
Improper backing	36	21
Unsafe speed	17	24
Inattention-carelessness	12	11
Violating right of way	7	12
Driving wrong side of center line	7	7
Following too close	6	6
Improper passing	4	4
Failure to signal	3	5
Improperly parked	3	4
Defective vehicle	1	2
Improperly loaded	1	1
Careless delivering	1	2
All other causes	2	1

What Causes Most Accidents?

THE apparently simple feat of operating in reverse actually is the number one cause of accidents involving vehicles used in the trucking industry. But the most expensive cause of accidents is driving too fast.

This comes from the safety engineering department of the Kemper group of insurance companies. The safety experts studied more than 1000 fatal, non-fatal and property damage accidents involving drivers in the trucking industry and found that 36 per cent of all the mishaps were caused by backing up improperly.

Speeding ranked second on the list of accident causes, accounting for 17 per cent of the accidents. Inattention-carelessness ranked third with 12 per cent. Speeding accidents, however, cost 24 per cent of the total dollar outlay for accidents and settlement of claims. Improper backing ranked second on the expense side of the ledger, accounting for 21 per cent of the total cost. Violating the right of way cost 12 per cent of the dollar outlay and ranked third in expenditures.

The causes of accidents to commercial vehicles in the trucking industry and their relative cost were listed as shown above:

The most important thing to remember about backing accidents is not the frequency with which they occur nor the cost, but the fact that they can be eliminated by using a little care and common sense.

The following suggestions are offered to eliminate backing mishaps: Plan the route to avoid backing whenever possible. If you must back up, personally check the rear of your vehicle to find out what is behind you and how much room you have. Do not rely on the rear view mirror. It gives only a partial view of what is behind. If you are stopped on a crosswalk by a traffic light, stay put. Pedestrians may be walking behind you. Use a driveway or drive around the block rather than turning around in the middle of a street.
















FEDERAL BALL BEARINGS

— the most complete line of automotive ball bearings anywhere!

Just a telephone call away ... to your local **N. A. P. A.** Jobber or Warehouse.

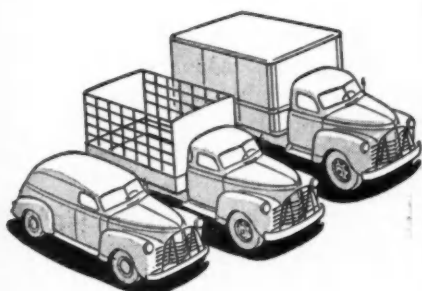


Federal BALL BEARINGS

THE FEDERAL BEARINGS CO., INC., Poughkeepsie, New York

The Most Complete Line of Ball Bearings for the Automotive Industry





If you occasionally need a truck...

For business or personal use you can rent a truck from Hertz for as long as you need it. Renting from Hertz is inexpensive and the price includes all gas, oil and proper insurance... in fact, everything but the driver!... so for business emergencies or peak-load periods... for moving or a hundred other uses... call Hertz for the truck you need. Businesses not owning trucks often have need for a truck at one time or another. So do individuals, for various personal needs. For such occasional use, call Hertz.

Call
HERTZ

Enjoy the many HERTZ SERVICE advantages

Who rents trucks from Hertz? Large corporations, small companies and individuals too. In most of the more than 500 cities in the nation-wide Hertz System, fleets of ½ ton, 1 ton, 2 ton, pickup, panel, van and stake body trucks are available and are always kept in excellent condition.

How much red tape? None at all! Accredited business firms simply call on the phone, make arrangements, send a driver for the truck. Individuals need only a driver's license and normal identification plus a small deposit. Call your Hertz station any time and rent a truck. In a matter of minutes you or your driver will be on the way! You pay only for actual time and mileage...no hidden charges, no confusing minimums, of any kind.

How small the cost? The rate for the use of a 1½ ton van dual wheel truck for a full 12 hr. day in St. Joseph, Mo. is only \$8.00 plus .10c per mile, including gas, oil and insurance. Thus, the total cost for a 30 mile trip is only \$11.00. Rates lower by the week or on a long-term lease.

Short term rent—long term lease. Hertz' Truck Lease Plan, for one truck or a fleet... is a proved plan that releases capital investment, and yet gives every single advantage of ownership, at a cost often less than ownership! For complete information about either short-term renting, or long-term leasing, call your local Hertz station, or write to the address below. Learn the facts. You'll profit!

Rent passenger cars from Hertz too! Hertz, world's largest, has properly conditioned, current model passenger cars for rent in more than 500 cities throughout the United States, Canada, Great Britain, Mexico, Hawaii and Alaska. Rent a new Chevrolet or other fine car and drive it as your own for as little or long a time as you want! Gas, oil and proper insurance are included in the low rates. Countless thousands rent cars from Hertz for business or pleasure—try it!



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COMMERCIAL CAR JOURNAL, April, 1952

Engine Developments

Continued from Page 14

high economy, overhead valve V-8. The L-head engine is as good as gone in this high compression phase of development. Only major exceptions to the trend are the Ford OHV Six and the Willys F-head Six.

Designed to consume higher octane fuels, these engines offer the highest bhp/cu in. ratings of any engines available up to now. And fuel econ-

omy is simply out of this world by comparison with previous practice. There is no reason why this should not have its impact on heavy-duty engines of the future. A tabulation of a few selected engines of this kind is given in the table on page 244.

As usual passenger car engines have boosted compression ratio above the average for heavy-duty en-

gines, most of them starting with 7 to 1 as a base and going up to as high as 7.7 to 1 in a few cases. However, even the new big engines have cut back on compression ratio in deference to the expected decrease in octane ratings of premium fuels.

Naturally the commercial engine builders must stay conservative so far as compression ratio goes. They simply can't follow the passenger car trend until we reach some bright day in the future when the synthetic fuels of fantastic octane ratings are actually available. You will recall that some prophets told us these fuels were just around the corner. It just ain't so today.

Mechanically and from the standpoint of durability commercial gasoline engines appear to be near the peak of perfection. Durability features such as valve rotators, valve inserts, heavy-duty copper-lead bearings, and the like have become almost common-place. And many makes and models feature replaceable cylinder liners. The general availability and use of the heavy-duty lubes also has contributed materially to increased life and greater freedom from maintenance troubles.

The new Ford engines, noteworthy examples of what can be borrowed from passenger car practice, claim lower friction horsepower loss because of a change to shorter stroke in both V-8's and the new OHV-6. This group of new engines, moreover, is fitted with Ford-made valve rotators for both intake and exhaust, with timing chain drive, and copper-lead main bearings for the larger models. Ford has gone all-out for full flow oil filters on its new engines. A tremendous amount of test work at Ford indicates that with full flow filters the crankcase lube is kept cleaner and for longer periods. In fact, Ford has found that if the cartridge is replaced at the regular stated intervals, oil changes lose their importance and oil need not be dumped so frequently.

Ford too has adopted a couple of new Holley carburetors which are well worth noting for performance as well as ease of maintenance. While on the subject of carburetors, it is well to watch the four-barrel jobs produced by Stromberg and Carter which are installed on Buick Road-

(TURN TO PAGE 242, PLEASE)

TO PREVENT CRACKED BLOCKS, BROKEN CRANKSHAFTS, SCORED CYLINDERS, USE THE

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Get peak performance, longer engine life, and king-size savings



The secret of good truck driving is the correct use of gears and engine. The Shiftometer, a unique electronic instrument, shows exactly when to shift gears, up or down, to keep the engine operating in its most efficient speed range. All gear change decisions are made for the driver—no guessing, no more listening for "lugging" sounds, no more late shifting. Better road speeds, safer passing, savings in fuel, reduced maintenance costs are yours with a Shiftometer.

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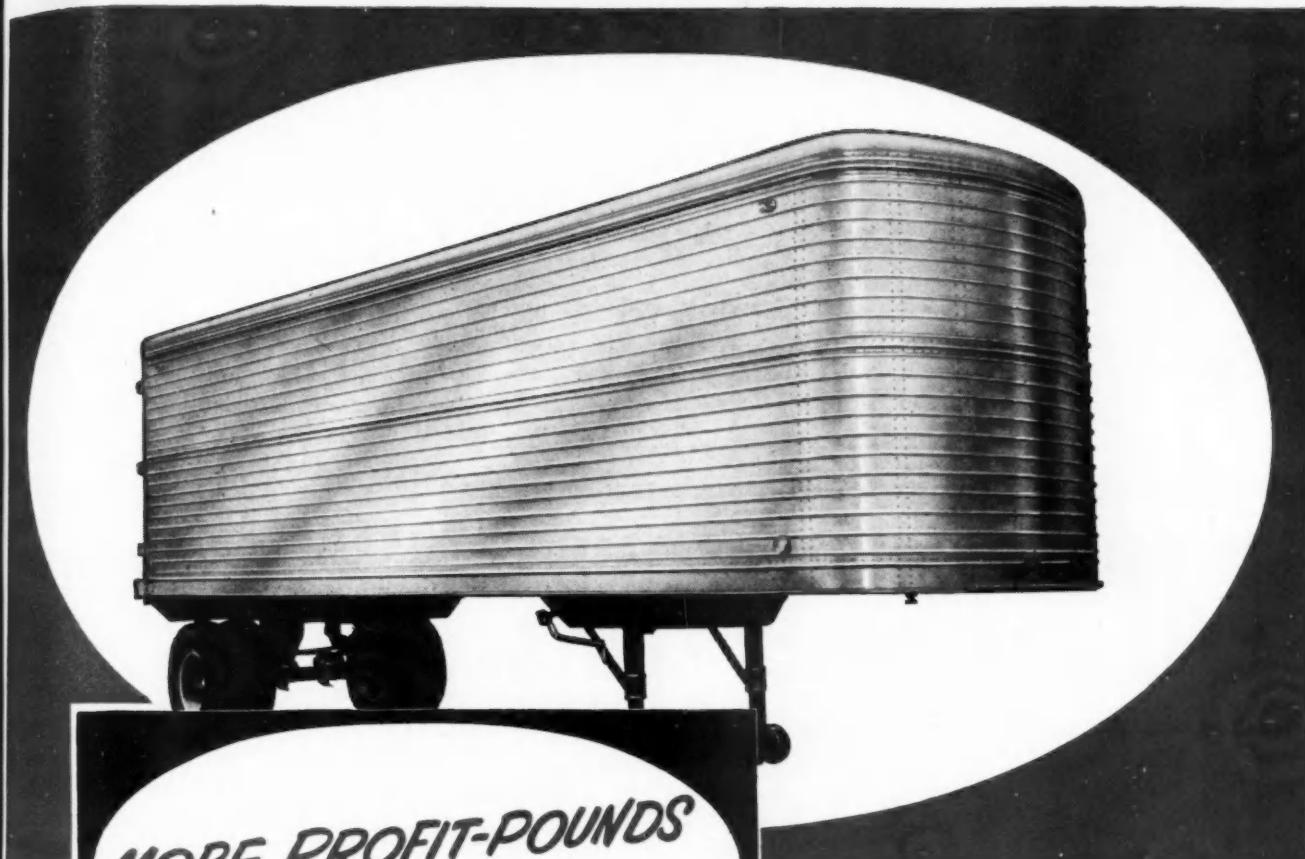
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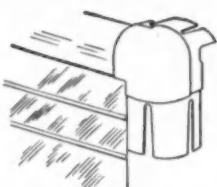
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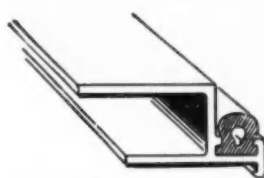


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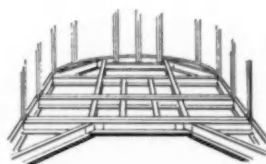
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SPECIAL CLAD aluminum alloy skins are corrugated to provide extra rigidity and strength.



ALL-ALUMINUM pre-cut structural members form the extra strong, rigid 5th wheel spider.

This sturdy aluminum trailer, produced by the companies listed below, reduces deadload from 1500 to 3000 pounds per unit. Although this trailer is in the "lightweight" class, it has the proved strength and durability of a "heavyweight". Tough Reynolds Aluminum alloys enable it to take road wear and tear . . . and without the maintenance expense of painting.

Built with standard parts, this rugged all-aluminum trailer is soundly engineered and quality controlled. Available in standard sizes for your particular requirements. Service parts available from this network of trailer producers. For additional information contact one of the manufacturers listed below. Manufacturing distributorships still available in some areas.

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BLACK DIAMOND TRAILER CO., INC.
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EDWARDS TRAILER COMPANY
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JOHN WANE MFG. CO., INC.
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MARVEL, INC.
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REYNOLDS TRAILER & EQUIPMENT CO.
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LOADCRAFT, INC.
Augusta, Kansas

MACK TRAILER AND TRUCK MFG. CO.
Detroit 1, Michigan

MILLER TRAILERS, INC.
Bendonia, Florida

THOMPSON TRAILER COMPANY
Pineville, Maryland

TRIMPE BROTHERS, INC.
Denver, Colorado

TRAILCO MFG. AND SALES COMPANY
Hagerstown, Pennsylvania

WILLIAMSON BODY AND EQUIPMENT CO.
Ogden, Utah

Engine Developments

Continued from Page 240

master, Cadillac, and Olds. These carburetors are responsible for an amazing increase in engine output without mechanical change.

Chrysler Corp. this season created a sensation with the introduction of the unique hemispherical combustion chamber and widespread valve layout in the OHV V-8's for Chrysler and

De Soto cars. We know pretty definitely that Dodge would have emerged with a similar engine had it not been for restrictions on delivery of machinery. Right now there is a 180-hp. job in Chryslers and 160-hp in De Soto. Just think of the possibilities of such engines adapted for use in Dodge trucks.

LPG and Other Developments

WHILE still on the subject of gasoline engines, consider the LPG trend. Both ICH and Reo are on the

band wagon. And the fuel situation looks good at the present time. LPG may not take the industry by storm, although this equipment is bound to make inroads as a competitor for both gasoline and diesel. Major problem is one of fuel distribution. Large operators take care of their own fuel problem. But the smaller users will have to watch the situation and wait until there is distribution nearby.

LPG has been in use for a great many years but it is only now that factory installations have become available. There have been troublesome problems, to be sure, for the pioneers. But then the pioneers have always blazed the trail for the rest of us. Some of the early problems were discussed briefly in *COMMERCIAL CAR JOURNAL*, January, 1952.

Meanwhile, work is being done to improve the gasoline engine in other quarters. At the recent SAE Transportation Meeting in Chicago there was a report on the Humphreys variable-compression ratio engine which claims extremely high fuel economy. True, it is purely an experiment. But it may have some significance eventually. One of our friends who has been working independently on engines for a great many years claims to have a variable-compression ratio engine of his own in a passenger car.

Another experimental process that has been given attention in SAE circles is the Texaco Combustion Process. Whether or not it will be adopted is problematic but the lessons learned from Texas research may have their effect upon engine design.

Diesel Engines

THE diesel engine has earned a definite and important place in the transportation picture through ruggedness, dependability, excellent

(TURN TO PAGE 244, PLEASE)

CUT PICK UP AND DELIVERY COSTS

See how it will save money for you...ask for Bulletin L-101.



Gar Wood Elevating End-Gate

Greatly increases deliveries per truck per day by speeding up loading and unloading. Operation is simple, positive, foolproof. Roll the load on at ground level or any level below the truck floor . . . touch the lever and up it goes by hydraulic power. Load need not be centered. Gar Wood Elevating End-Gate stops wherever it is when lever is released . . . or stops automatically at truck floor level. Unloading is just as easy. Fits standard trucks and trailers 1 ton or larger. Write for Bulletin L-101.



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52-3



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KELSEY-HAYES

MOST ADVANCED *Feather touch* PASSENGER CAR

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FOR EFFORTLESS, SAFER BRAKE CONTROL!

Right or Left
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New accelerator-type
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Kelsey-Hayes "Vacdraulic", already standard equip-
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Kelsey-Hayes "Vacdraulic" unit utilizes complete
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PRODUCTS: Wheels—Hub and Drum Assemblies—Brakes—Vacuum Brake Power Units—for Passenger Cars, Trucks,
Buses—Electric Brakes for House Trailers and Light Commercial Trailers—Wheels, Hubs, Axles, Parts for Farm Implements.
PLANTS: Kelsey-Hayes Plants in Michigan (4); McKeesport, Pa.; Los Angeles, Calif.; Davenport, Iowa; Windsor, Ontario, Canada.

Table I. Bhp/ cu.in. Comparison Selected 1952 Engines

Make	Type	Displacement (cu. in.)	Bhp (max.)	Compression Ratio	Bhp/cu. in.
*De Soto	OHV-V-8	276	160	7.1 to 1	0.579
Willlys	F-head 6	161	90	7.8 to 1	0.559
*Chrysler	OHV-V-8	331	180	7.5 to 1	0.544
Ford	OHV-V-8	270	145	7 to 1	0.520
Ford	OHV-V-8	317	155	7 to 1	0.482
Ford	OHV-6	215.3	101	7 to 1	0.468
Chevrolet	OHV-6	235.6	105	6.7 to 1	0.446
Ford	L-head V-8	239	106	6.8 to 1	0.443
Ford	L-head 6	254	112	6.8 to 1	0.441
Reo	OHV-6	292	124	6.55 to 1	0.424
Reo	OHV-6	331	140	6.4 to 1	0.423
Reo	OHV-6	255	107	6.7 to 1	0.420

* Denotes passenger car engines.

Engine Developments

Continued from Page 242

maintenance history, and fuel economy. In recent years diesel engines have grown bigger in output to match the requirements of over the road haulers. One of the striking announcements made recently is found in the adoption of the GM 3-71, three-cylinder two-strokes diesel in the GMC Series D450-37 light weight truck and tractor models.

At the same time Cummins recently introduced high speed, high performance engines to meet the requirements of its users.

An almost fantastic report on a diesel job in Germany, claimed to give almost 300 ton-miles per gallon appears in *Automotive Industries*, Feb. 15, 1952. This is a two-stroke cycle, loop-scavenged engine described by Prof. P. H. Schweitzer of Pennsylvania State College.

Among others, Diamond T recently announced its most powerful diesel trucks for commercial use. The diesel engines for Models 950 and 951 range up to 300 hp, including standard and supercharged engines built by Cummins and Buda.

Gas Turbines

ALTHOUGH the gas turbine is not yet commercially available for trucks, it has come a long way since the end of the war. About the first job to be exploited experimentally was the Boeing 150-hp gas turbine which was demonstrated in a Kenworth truck a year ago. It is undergoing further development and refinements.

The writer is particularly impressed with the family of gas turbines and jet engines recently announced by Continental Aviation & Engineering Corp. Designed for aircraft applications at the start, these machines will have the benefit of production for military use. One of the most likely machines for commercial use—in motor vehicles—is the Artouste 1, a shaft turbine of 280 hp, weighing only 185 lb.

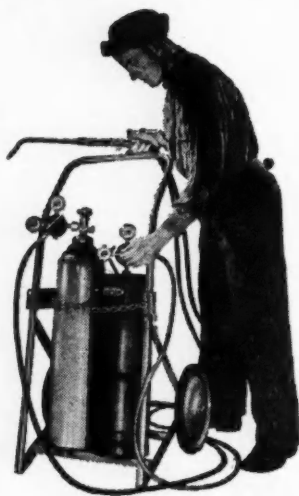
Then along comes a contribution from Paris (see *Automotive Industries*, Feb. 15, 1952) revealing the designs for a French gas turbine truck of 10- to 15-ton capacity, GVV

(TURN TO PAGE 246, PLEASE)

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					Full lb.	Empty lb.
Oxygen	Q*	80	35	7 1/8	67	60
Acetylene	WQ	60	24 3/4	7 3/4	55	51

*In some areas, Style XL, 70 cu. ft.

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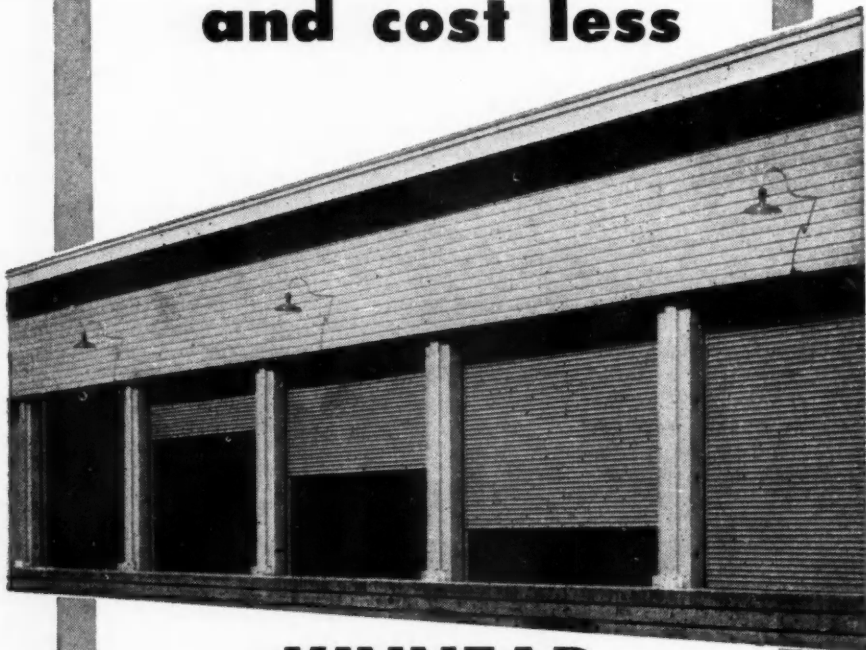


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ROLLING DOORS

Engine Developments

Continued from Page 244

of 36,000 lb. The layout consists of two-free-piston type engines each of 120 hp, feeding a two-stage turbine.

Still another interesting job is a small gas turbine that can be started by hand. Developed by Solar Aircraft Co. for the U. S. Navy, this machine is described in *Automotive Industries*, Sept. 15, 1951.

All of this evidence proves that a lot of people are doing something about the gas turbine. As usual, part of the waste of war will include the development of machines which later may well be adapted for more useful purposes.

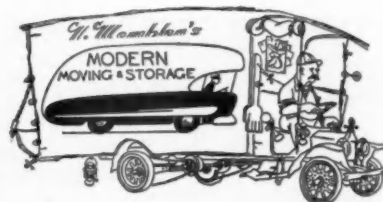
At the present time the chief drawback of the gas turbine still remains what it was at the start, namely extremely high fuel consumption. Whether this problem can be licked satisfactorily from a commercial standpoint is something we shall have to leave to the experts,

Automatic Drives

WE mentioned earlier the swing to automatic drives in commercial vehicles. True, the current crop applies only to the smallest units. Whether they can be suitable for larger vehicles again is a matter for the experts and the future.

Meanwhile, both GMC and Ford now have models fitted with fully automatic drives. IHC uses the Fuller torque converter. In a recent report Twin Disc Clutch Co. describes the testing of a heavy-duty truck of 130,000 lb. GVW rating fitted with a new Twin Disc torque converter. It is of three-stage, single-phase type, with a direct drive clutch. One of its unique features is the utilization of a means of applying downhill braking with the torque converter, thus providing for adequate safety of operation on steep grades.

(TURN TO PAGE 249, PLEASE)



Engine Developments

Continued from Page 246

Power Steering

ALTHOUGH power steering has been used in buses, trucks, and off-highway vehicles for many years, we believe that the current introduction of hydraulic steering gear in passenger cars will accelerate its adoption for the general run of highway vehicles. Power steering now is offered by Vickers, Ross, Gemmer, and Saginaw Steering Div., GMC. The latter company alone expects to produce some 60,000 units in 1952 for Cadillac, Buick, and Olds.

With both Saginaw and Gemmer in mass production, it is quite likely that cost economy will be greatly improved as time goes on, thus aiding the overall picture materially.

With weight restrictions getting worse rather than better, most motor truck manufacturers are shifting more weight to the front axle. This has the effect of increasing the load on the steering mechanism and with it an increase in steering effort even for lighter vehicles. While it is possible to offer some relief by increasing steering ratio, there has got to be a limit to the number of turns of the steering wheel for safe maneuvering.

Power steering offers the best and

most practical solution. And we visualize an extension of power steering in the near future. Apart from safety, this will ease the task of driving the larger vehicles, make parking a pleasure rather than a job, and relieve drivers of fatigue.

Discussion of Table 1

Table 1 is an arbitrary sampling of some 1952 engines, particularly the new V-8's and Ford OHV-6 which represent latest practice in light-

weight, high performance features conducive to exceptional bhp/cu in. ratings. Included in this group are the Reo engines and the Chrysler and De Soto V-8's. The latter are included only because of the possibility that they may one day be adapted for commercial vehicle use.

It is noteworthy that the dependable Chevrolet OHV-6 shows up very well indeed in this tabulation.

END

Please Resume Reading Page 20

New Arrow Magnalite

New lens design • Less weight • Better appearance

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with revolutionary new
Magnalume Lens

New, more efficient prism design. Here is a lens so well designed, so effective, that it needs no reflector. The Magnalume Lens gives you greater safety through greater visibility. It is guaranteed fade-proof and not to crack or draw.

Makes possible narrower, lighter lamp. Because the Magnalite needs no reflector, you get a narrow, neater lamp. Width of the double-faced Magnalite, for instance, is less than 2 1/4". Lighter in weight, the Magnalite places less vibration strain on fenders.

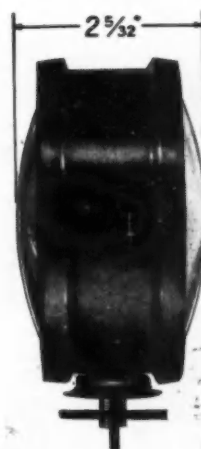
Three types available. For light and heavy trucks as well as buses. The flush-mounted Magnalite protrudes less than 1/2". The single-faced and double-faced Magnalites, which can be mounted on fender or bracket, are less than 4 1/2" in diameter. Baked black enamel finish. Bulbs easily replaced with foolproof snap ring. Magnalites also available in kits with switches.

Model N-260 — All Magnalite Directional Signal Sets are equipped with this switch. Built-in flasher. Positive proof indicator. Unconditionally guaranteed. **ORDER NOW!**



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ARROW SAFETY DEVICE COMPANY
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N-128—Double-faced Magnalite.



N-129—Flush-mounted Magnalite.

Chassis on Display



"Miss Job-Rated," who reigned over the Dodge Truck exhibit at the 1952 Chicago Automobile Show, points out to Dodge home office officials and dealers some features of a chassis display. Left to right, are: Ray Eddy, president of Ray Eddy, Inc., Chicago; L. J. Purdy, vice-president and general manager—trucks, Dodge Division, Chrysler Corp.; E. C. Dock, general sales manager of Dodge; W. C. Newberg, president of Dodge; Harry J. Washington, Chicago regional manager of Dodge; and George F. Fiedler, president of Fiedler Motors, Blue Island, Ill., and co-chairman of the Dodge dealer show committee



Prisoner of War food packages arrive at dockside at the Oakland, Calif., Army Base for shipment to the Far East

Driver R. R. Warren (left) PIE driver, and J. F. Hoffe, Red Cross field director, check the first truckload of POW packages

*Better Engine Performance
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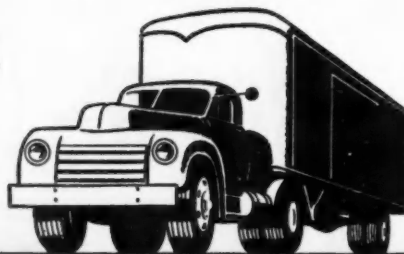
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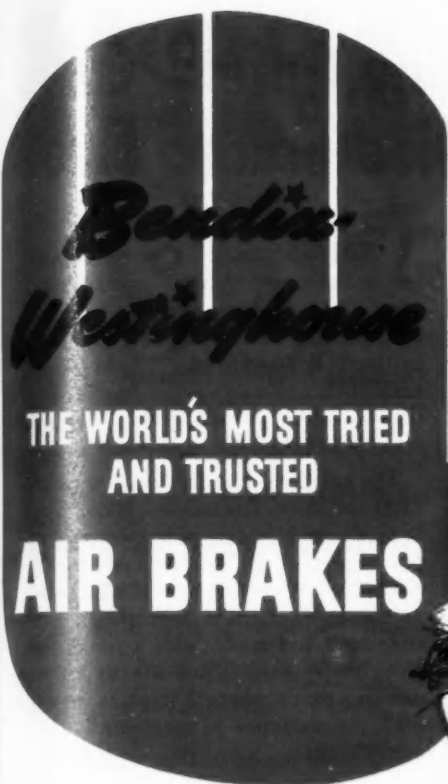
Fleets Ship Red Cross Prisoner Packages

THE growing trend in the trucking industry to render service beyond the normal call of duty has been felt in many areas within the past few years. Flood service, disaster corps, and emergency highway aid have become a part of the fleet operator's overall program of better public relations. Another step has been taken, this time to extend the goodwill of the trucking industry across the seas.

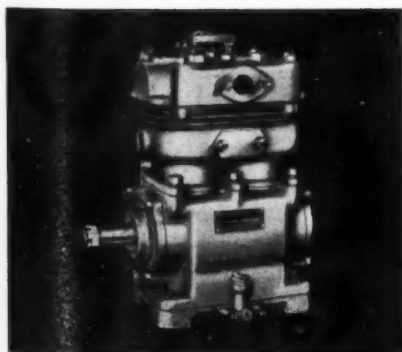
Interstate Motor Freight System and Pacific Intermountain Express cooperated with officials of the American Red Cross in moving a cargo of 5000 parcels for use in POW camps in Korea from Washington, D. C., to the ship at Oakland, Calif., free of charge. The cargo weighed 66,250 lb.

The exact status of the prisoners of war in Korea was uncertain at the time, but American Red Cross officers believed that the parcels should be available on the west coast or in Japan, to be shipped to Communist China as soon as the technicalities were removed. The parcels were assembled by volunteers loaded and shipped without fee.

In addition to food parcels, GI prisoners will receive other units prepared for those who may be ill or extremely undernourished. There are medical kits and food packages already in or on the way to Japan waiting for the negotiations with the Communists to be completed.



What's a BUS... doing in a Trucking Magazine?



THE BENDIX-WESTINGHOUSE COMPRESSOR—heart of the air brake system—performance proven over more miles on more installations than any other compressor available!

Seeing a bus in a trucking magazine might seem as unusual as a top hat at a wrestling match, but when it comes to braking it illustrates a point of mighty great importance to you. That's because the bus industry, due to the very nature of city driving . . . requiring a terrific number of braking applications per mile . . . is recognized as the **world's toughest proving ground** for any braking system. And over the years the nation's bus operators have made Bendix-Westinghouse Air Brakes first choice for this rough and rugged braking chore. But what does this mean to you? It means when you specify Bendix-Westinghouse Air Brakes you specify a **completely proven braking system** ready to deliver full power and performance under any and all driving situations. What's more, it means you specify **the world's finest compressor**—built on the same proven reciprocating piston principle as the engines in your trucks—with a demonstrated ability to maintain full air pressure under even the most grueling conditions for **longest service life at lowest maintenance costs!** So why not follow the lead of America's transit lines—specify Bendix-Westinghouse, the world's most tried and trusted air brakes!



BENDIX-WESTINGHOUSE AUTOMOTIVE AIR BRAKE COMPANY
ELYRIA, OHIO BERKELEY, CALIF.,

COMMERCIAL CAR JOURNAL, April, 1952



Highway Safety Car Joins Dieckbrader Fleet

THE addition of a new safety director and a new highway safety car has been announced as a part of a campaign being waged against accidents by the R. E. Dieckbrader fleet in Cincinnati. This common carrier has 75 drivers working out of three terminals, covering about 270,000 miles each month.

The safety director is a former police chief of New Richmond, Ohio, Fred Hoh. His job began with a survey into the inspection, maintenance and overall condition of the various trucks and units in the fleet. Certain corrections were suggested and made, with a result that Hoh finally said "Now it's up to the drivers; that's where I hope to accomplish the reduction in accidents."

Adopting the belief that a driver does not readily see or admit the faults of safety violations in his driving unless shown, Hoh began to make moving pictures. For this purpose and as an added item of public relations, the company purchased a sedan delivery truck, completely equipped.

Hoh travels the highways in this truck checking on the driving habits of his drivers, making movies, and in general rendering assistance to stranded motorists or truck operators.

The truck is equipped with a series of built-in cabinets on each side which hold various types of safety equipment, fire fighting equipment and spare parts. The center has been kept open in order that Hoh might move injured persons at the scene of an accident in cooperation with the police.

The movies made on these trips deal largely with unsafe practices which Hoh has noticed being made by his own drivers. In addition, there is always an opportunity to film a particularly hazardous move being made by a driver of another fleet.

The results of his observation and the films made are shown to the drivers at a regular safety meeting. Hoh believes that if they actually see themselves or see a fellow-driver making a bad highway move, the condition may be corrected more speedily. The statistics on the fleet are still incomplete and a careful study will be needed before any definite results may be announced. Some indication has been noticed, however, which indicates that there have been fewer accidents and that the drivers' safety attitude has improved.

Now! Complete Line of **Snugl**®

WHEEL BALANCING WEIGHTS for TRUCKS and BUSES

GET IT FROM YOUR JOBBER

T.V. HEAVY DUTY THIN

R & S REGULAR TRUCK Fits about 80% of all Truck Rims

"STANDARD OF THE TRADE"

Snugl Heavy Duty Truck Weights are especially designed to give

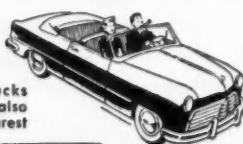
- EASIER APPLICATION
- BETTER FIT
- BETTER BALANCE

The exclusive Dove Tailed Steel Spring Clip holds weight firmly to rim with a Bull Dog grip . . . the beveled edges prevent clip from gouging tire.

When you buy Snugl you can be sure of getting the finest Wheel Balancing Weights on the market . . . designed right and made right to give better balance and better fit. The name Snugl (Registered Trade Mark) on every weight is your guarantee of complete satisfaction.

FOR PASSENGER CARS

Write for illustrated catalog sheets of Snugl Wheel Balancing Weights for Passenger Cars, Trucks and Buses . . . also name of your nearest Jobber.



Special Thin K & L Flange Weight for Passenger Cars



Regular K & L Weight for Passenger Cars

ID- WESTERN AUTO PARTS
MANUFACTURERS EXCLUSIVELY
MAIN OFFICE AND FACTORY KOKOMO, INDIANA
WEST COAST FACTORY WHITTIER, CALIFORNIA

ALCOA ALUMINUM

THE LIGHT METAL THAT LASTS

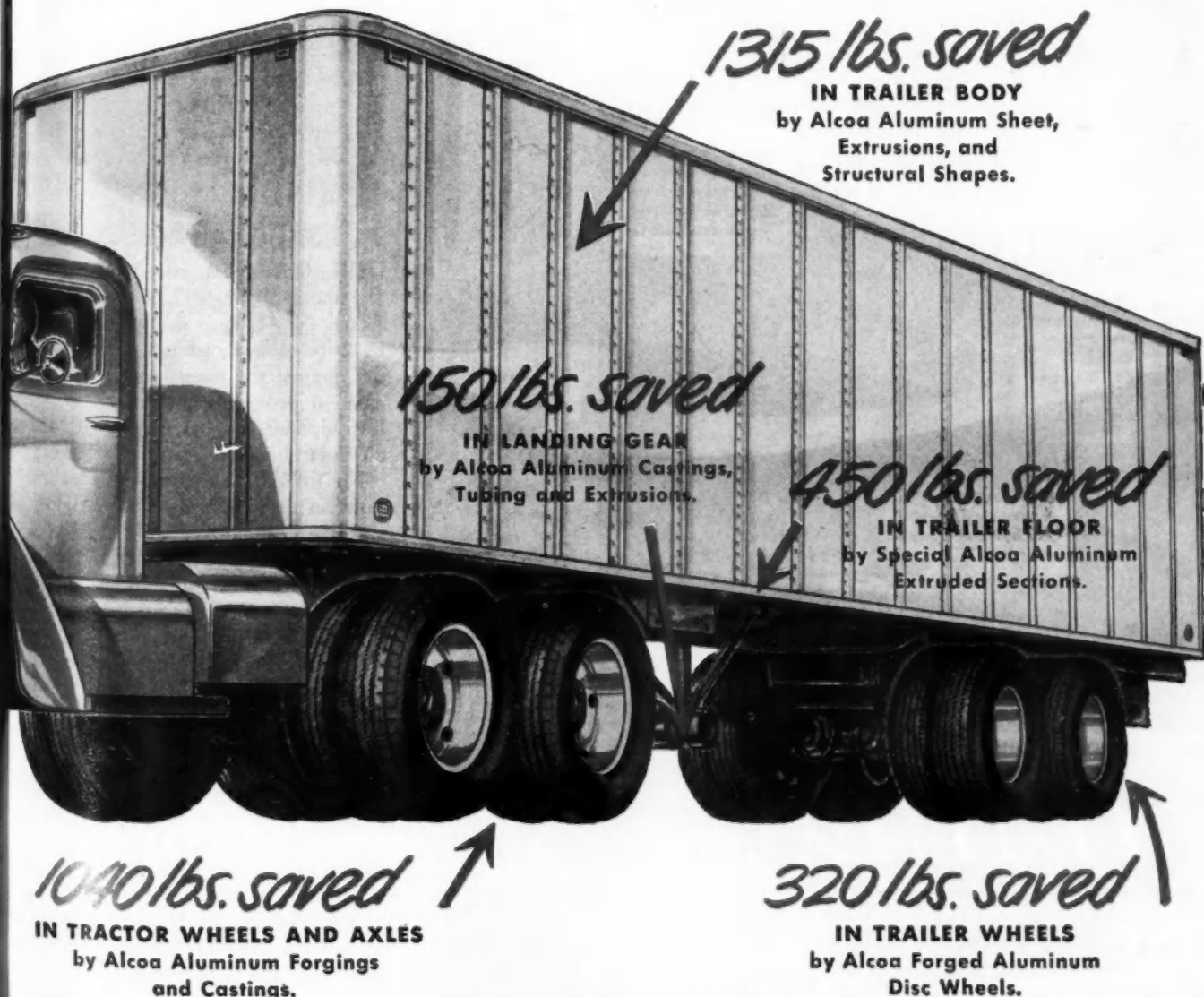


After all, it's *payload* that earns your profits. So when you add payload capacity by reducing dead weight . . . with Alcoa Aluminum . . . you're really putting money in the bank! Plus what you save on maintenance, because aluminum resists corrosion, repairs easily.

Right now, military needs for light metals may limit the aluminum equipment you can buy. But looking ahead, figure how much more payload you'll be able to haul when you *can* make the most of aluminum's advantages.

Take a look at the average weight-saving figures opposite, based on a tandem tractor and 32' tandem semi. Yours may be less, or more, depending on size and type. One result is sure. You'll find . . . "Extra payload is the payoff" with Million-Milers of Alcoa Aluminum!

Send for Free Trailer Book—This 36-page "Payload Proof" book, showing many types of aluminum trailers, will be valuable in your long-range planning for more profitable equipment. For your free copy, write ALUMINUM COMPANY OF AMERICA, 1876D Gulf Building, Pittsburgh 19, Penna.



MILLION MILERS OF ALCOA ALUMINUM

COMMERCIAL CAR JOURNAL, April, 1952

Bus Cleaning Now a One-Man Operation

IT IS now possible for one man to thoroughly clean the inside of a bus in two or three minutes regardless of the accumulation of dust, dirt, paper or rubbish.

The job of sweeping and cleaning up after a day's run is normally a job for two men. The litter and dust must be hand brushed from under the seats into the aisle, and from



Operator holds the high-pressure nozzle in his left hand as he guides the hose connected to the garage air system with his right. Paper and refuse stirred up by the air blast are drawn out of the open front door (arrow) into the system. Operator, standing behind the air blast, is not bothered by the dust stirred up

No. 1270-S

THE Anthes LINE

Mirror rides completely in rubber. Glass can easily be replaced. Waterproof

Anthes patented strut, raises or lowers, swivels on ball and socket—fits all conditions.

Finest, clear mirror glass, sees everything. No shimmy—no blur. 4x8 inch size.

New, improved heavy steel bracket for hinge or body mount.

Write today for your copy of the new Anthes catalog. Detailed descriptions of mirrors and all other Anthes Highway Safety Equipment.

ANTHES FORCE OILER CO.

FORT MADISON, IOWA

Anthes

THE FIRST LINE OF SAFETY

... and proud to serve the safest drivers on the road!



LIGHTS



REFLECTORS



FLAG FUSES



FOOT PLATE



EXTRA BURNERS



TRUCK PLATE



MIRRORS

there to the front entrance. A second run plus a dusting of rails and seats may also be done. This totals a full 8-hour day for a man to clean 50 buses—10 to 15 minutes per bus.

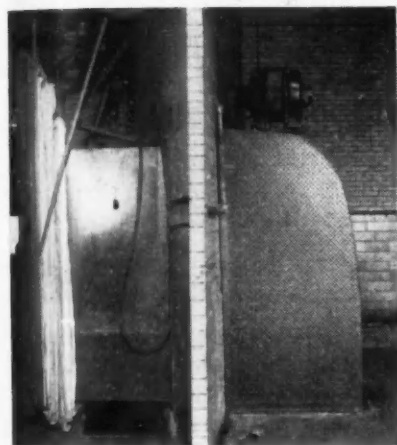
With the invention and successful development of the Buck Cyclone Cleaner, these buses can have dust, dirt and refuse removed in from two to three minutes.

How It Works

THE CLEANER, as shown in the photos, consists of a wooden frame on which is mounted a 6 in. by 2 in. rubber cushion. This frame fits against the open front door, the cushion providing a seal. The bellows connecting the frame with the air duct is supported on an overhead roller track. This is moved forward into position by a small air cylinder and operating valve.

The cleaner opens two windows in the rear of the bus, connects an air hose to the garage system, then throws a nearby switch starting the cleaner's two 28-in. fans. The air hose has a small nozzle at the end with which the operator directs a stream of air, first along the floor, then across the seats, blowing dirt, papers, and dust forward into the cleaner.

The cleaner draws from the rear windows a volume of air large enough to move all the refuse forward and into the duct at the front door. Because of this air motion, dust does not have a chance to settle on the seats, making a second application unnecessary.



(ABOVE) Canvas bellows, suspended from running rail, makes tight seal at front door. (BELOW) Duct system goes through wall, under floor, finally to roof fans

How the Cleaner is Built

THE attachment at the door is connected to the cleaner duct by a canvas bellows. The duct is built into the garage by the owner, and is not included in the cleaner installation, as this varies with each garage. The duct may be under-floor or overhead, even through a wall or partition such as that shown in the picture. The duct connects the cleaner unit with the blowers, usually located outside the building on the roof. Here the paper material is collected in a basket type structure for later disposal. The dust is blown through a water mist and settles in a separate area below the paper trap.

The "Cyclone" cleaner is not portable, but is placed in a position in the garage where the bus may readily be driven into place in front of the duct. The air volume is moved with two 28 in. White motor fans which in turn are driven by a v-belt connecting to a 7½ hp ac motor.

In one garage where there was excessive moisture in the building's air system, a series of drip tanks were installed.

Its Inventor a Bus Man

THE cleaner was originally designed by W. J. Buck, superintendent of maintenance, Washington Virginia & Maryland Coach Co., Arlington, Va., and is now being manufactured and distributed by Ross & White under license agreement.

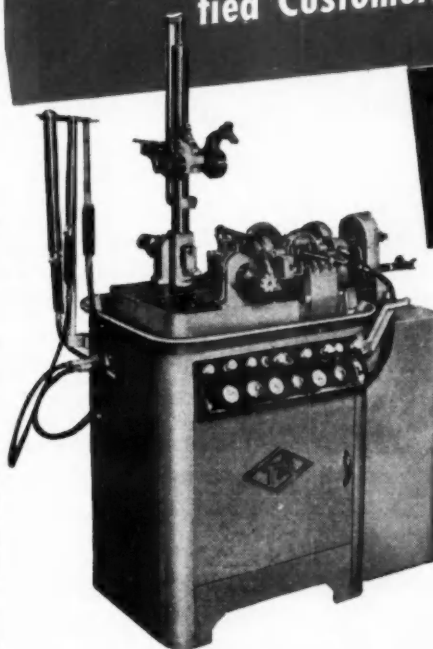
According to Mr. Buck, recent tests with velocity metering equipment indicate that the device will move 12,855 cu ft of air per minute through the bus at a speed of 30 mph with a window opening at the rear, as in standard cleaning operations, of 6 sq ft.

It is important to note that the man in the bus with a high pressure hose works behind the dirty area, hence is not subjected to flying debris.



Eliminate Crippling Cost of Comebacks, Dissatisfied Customers

Take Your Pin Fitting To The Jobber who is equipped with a Tobin-Arp "PM" Boring Method Pin FITTING MACHINE



PM-100 BORING METHOD Pin Fitting Machine

Equip your shop with this machine, or take your work to progressive shops offering PRECISION PIN FITTING on TOBIN-ARP'S PM-Machine. Also precision bores Rocker Arms, Wheel Cylinders, Steering Sectors, etc., with

NO BELL MOUTH — NO BARREL and NO DANGEROUS ABRASIVE

TOBIN-ARP *Always First With the Best!*



TOBIN-ARP MFG. CO.

2845 HARRIET AVENUE

MINNEAPOLIS 8, MINNESOTA

New Product Descriptions

Continued from Page 51

P196. Vacuum Cleaner

A new big brother to the Hild heavy duty portable vacuum is now available through all Hild distributors. The new model is made with a 55-gal tank which holds 5 bushels of dry dirt or 40 gal of recovered liquid.

For easy handling, the entire unit is mounted on a heavy steel dolly

fitted with a hinged handle and three ball-bearing casters. A two-inch, quick-opening gate valve permits the liquid contents of the tank to be emptied into a drain or gutter. The 20-ft vacuum hose is made throughout of oil-resistant synthetic rubber, wire reinforced for extra strength.


Numerous attachments equip the Hild Vacuum to do a wide variety of

jobs. When used to take up dirty scrubbing solutions, it leaves floors clean, dry and slip-safe. Flooded areas are quickly dried with this unit. There are other special attachments to clean stock bins, overhead pipes and beams, walls, ceilings, machine tools, etc.

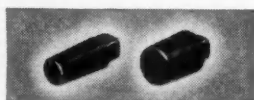
P197. Battery Charger

A new charger for slow rate, either 6 or 12 v, is made by Sun Electric Corp., Chicago, Ill. The model is equipped with a full-wave selenium rectifier. The unit is designed for use

Cracked block repairs
You can't even see!



WITH VERSNICK TAPER PLUGS



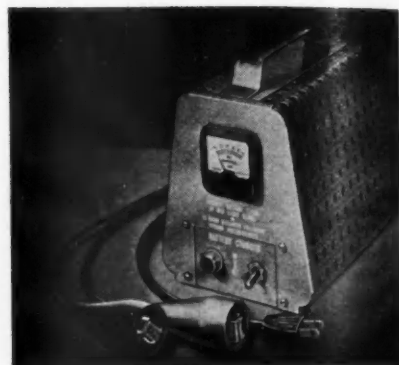
Even the most difficult cracked block jobs can be repaired permanently and economically with the Versnick Process—using Versnick taper plugs, cylinder and valve port sleeves, and MET-L-SEAL.

Because Versnick taper plugs are made of motor-block iron, they expand and contract at the same rate as the block—actually become part of it. You can't even see the repair!

For fast, efficient repairs, send your cracked and damaged motor blocks to your nearby Versnick Block Repair headquarters.

For quick, permanent sealing of minor cracks, use Versnick MET-L-SEAL, the new ionized iron compound, developed, tested and proven by America's top motor block repair specialists. Just circulate it through the cooling system.

For complete information, write Versnick Manufacturing Company, 4700 East Nevada, Detroit 34, Mich.



on batteries which require a continuous slow, taper-charge, and is fully protected against overload or reverse hook-up. Its outstanding feature, according to Sun, is the economy of operation—fully charging a standard size battery for less than two cents worth of current.

P198. Pallet Rollers

To make palletized loadings easier to handle, a group of three pallet rollers have been introduced. The Ace "Stevedore" model is 36 in. square, with sets of four rollers on each side. It may be used inside a trailer to bring the load to the rear gate. A longer "Reefer" model measures 36 in. by 42 in., and is used primarily in freight car work. The "Swivel" is also 36 in. square, but it has its rollers mounted in the middle of each side channel, with four swivel casters, one on each corner. The manufacturer: Frank L. Robinson Co., Oakland, Calif.

P199. Piston Knurler

The new Tillis Kam-Knurl machine, designed to provide a precision method for expanding the piston cam diameter, is now being offered by (TURN TO PAGE 260, PLEASE)

USE C-W FOR YOUR P.M.P.*

Stop BROKEN STUDS - LOOSE DUALS - EXCESSIVE TIRE WEAR

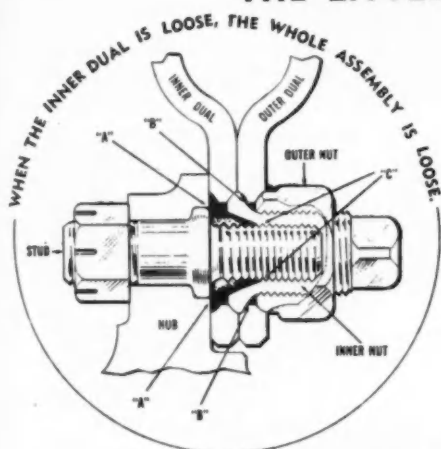
WHY C-W

SAFETY RINGS SHOULD BE A "MUST" IN YOUR PREVENTIVE MAINTENANCE PROGRAM:

- BECAUSE...** new wheels are almost sure to **LAST THE LIFETIME OF THE VEHICLE** when equipped with C-W Safety Rings.
- BECAUSE...** old wheels, about to be scrapped because of enlarged stud holes, can often give **LONG ADDITIONAL SERVICE** with C-W Safety Rings.
- BECAUSE...** tests show that **LOOSE WHEELS** can crystallize and break even new studs in as little as 10 miles . . . and cause stud holes to get out of round very rapidly, soon making the wheel unusable.
- BECAUSE...** C-W Safety Rings insure that wheels are held tight and are centered on the studs at all times.
- BECAUSE...** C-W Safety Rings pay for themselves many, many times over.

THE LITTLE RING

THAT DOES THE BIG JOB



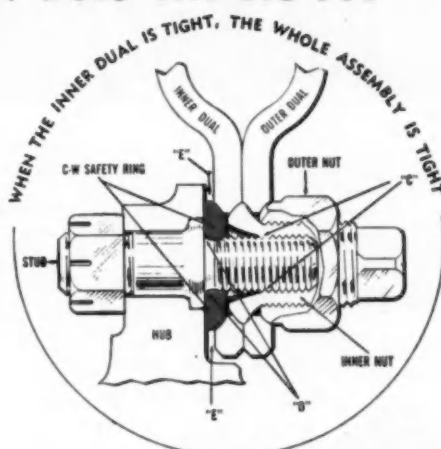
Pat. Applied For

Made in 2 sizes Standard $\frac{3}{4}$ " Budd Stud $1\frac{1}{8}$ " Bus-Type Stud

Quick and simple to install on your present Budd Studs

List Price:

50c each



The tightness of the Standard Budd Wheel Assembly depends on the inner dual remaining tight to serve as an anchor for the outer dual, because:

- The outer dual is pressed against the inner dual by the outer nut. One face of the outer dual is supported by the outer nut, but the other face is supported **ONLY BY THE FACE OF THE INNER DUAL.** (Note Trouble Space "B".)
- The inner dual is pressed against the face of the hub by the inner nut, but is **COMPLETELY UNSUPPORTED AT TROUBLE SPACE "A."** This allows looseness to develop, which in turn loosens the entire assembly, because **THE TIGHTNESS OF THE ENTIRE ASSEMBLY DEPENDS UPON THE TIGHTNESS OF THE INNER DUAL WHICH SERVES AS AN ANCHOR FOR THE OUTER DUAL.** Note how entire load is supported only at one point "C."

The use of the easy-to-install C-W Safety Ring guarantees the inner dual being held tight at all times, because it is now locked up on not one but both sides, directly onto the stud.

- Note how trouble space "A" is eliminated.
- Note how inner dual is held on both sides.
- Note how load is now distributed on the stud at two points, "C" and "D", which lessens strain on studs and helps prevent stud breakage.
- Note air space "E" which now separates hub from wheel and reduces heat transference from brakes to tires, thereby letting tires run cooler and increasing mileage.

ORDER THROUGH YOUR JOBBER OR DIRECT

NOW BEING USED BY BUS AND TRUCK FLEETS EVERYWHERE

CANADY-WILEY MANUFACTURING CO., INC.

"DESIGNERS OF RELIABLE TRANSPORTATION EQUIPMENT SINCE 1919"

1517 South Evergreen, Los Angeles 23, California

New Products

Continued from Page 258

the Tillis Mfg. Co., Elkhart, Ind. A self-aligning knurling head has two roller knurls, whose pressure on the metal is controlled by an air cylinder. One of these roller knurls is on the outside of the piston; the other, acting as a roller anvil, is on the inside of the piston. These two knurls stretch and swage the metal, and ex-

pand it not only at the knurl but also between the knurl patterns by means of the stretching action.

Even spacing of the knurl patterns is controlled by a gauge on the bed, while the length of the knurl patterns is governed by adjustable stops on the lathe-type headstock.

Other features contributing to this knurling method are: accurate control of air cylinder speed to eliminate piston shock; accurate regulation of air cylinder pressure; a custom-built three jaw universal, heavy-duty

chuck with special jaws for gripping ring lands to hold the piston rigid and secure.

P200. Booth Coating

A coating material, sprayed on the walls of any wet or dry type paint booth with standard spraying equipment, has been marketed by Detrex Corp., Detroit. According to the manufacturer, the coating has a rapid drying quality as well as a low adhesive characteristic. To remove the coating when the over-spray has built up, it is peeled off in large strips. Recoating may be done without more than average preparation. A gallon of the material will cover 275 to 400 sq ft.

P201. Garage Heater

A warm air, direct fire heater for garages, warehouses or large areas that will operate from either fuel oil or natural gas without a mechanical change-over has been introduced by the Thermobloc division of Prat-Daniel Corp., South Norwalk, Conn.

The combination burner permits instantaneous change-over from gas to oil or from oil to gas without piping changes, burner changes or adjustments. The changeover may be automatic or with a manual push-button. The manufacturer states that this unit was developed to combat a natural gas shortage which often occurs during extremely cold weather or to combat oil shortages which may occur.

All that is needed for completely automatic operation is an outdoor thermostat which can be adjusted to a change-over thermometer.

P202. Tool Grinder

A wet tool grinder, with wheel diameters of 15 in. to 20 in., a heavy center spindle, a tilting table 10 in. x 10 in., and a large coolant supply directed on the wheel and work without spatter has been introduced by Standard Electrical Tool Co., Cincinnati. With many shop or tool room uses, the grinder is equipped with a self-priming coolant motor with an adjustable nozzle and valve.

The unit is powered with a full-horse electric motor with a 2-step speed pulley to compensate for the reduced diameter of worn grinding wheels.

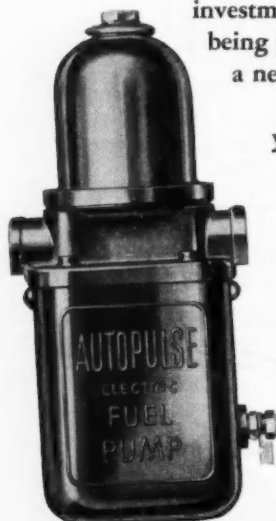
(TURN TO PAGE 264, PLEASE)

COMMERCIAL CAR JOURNAL, April, 1952

**you're
being
robbed!**

when your drivers light these

Your profits are being wasted when your drivers light these flares by the roadside. Add up the interest on your investment, overhead, idle men being paid — every hour lost is a needless drain on your income.



Install Autopulse Electric Fuel Pumps and you can forget a frequent cause of lost time, stalling due to vapor lock. Autopulse can be installed anywhere between the fuel tank and the carburetor, does not need to be placed right over the hot engine, and because it is a *pusher pump* and does not draw the fuel to the engine it keeps your vehicles on the job. In the hot summer weather or in the dead of winter you are sure of instant starting — you can meet deliveries "on the nose." See your Autopulse dealer today or write for illustrated folder.

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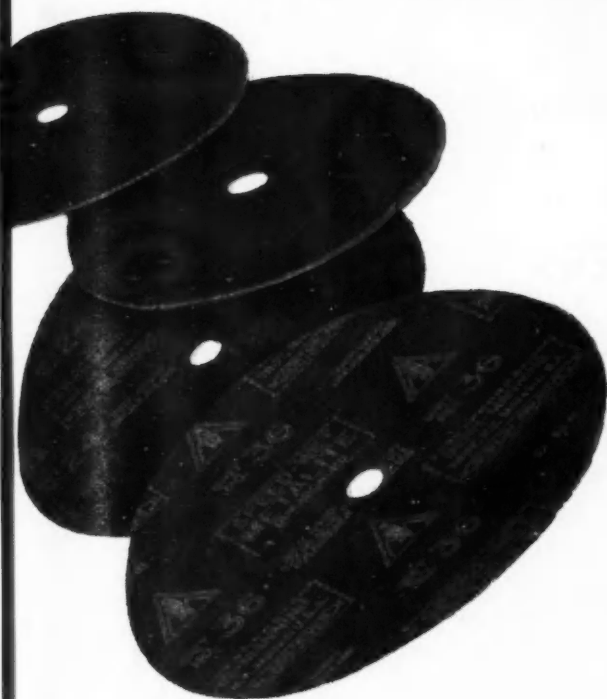
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1, 1952



● You'll find your business booming along at a faster rate when SPEED-WET Discs are on the business-end of your sanding machines. They finish up jobs faster because each cutting grain is tough, rugged aluminum oxide "grinding wheel grit." SPEED-WET Discs cut replacement time and costs too... they're DURABONDED® to prevent shedding, and a thermo-setting bond locks each grain to the 100% fibre backing—a second coat of the heat-resisting Resin anchors each grain in its original cutting position—keeps them biting through the heat of heavy duty grinding. See the difference they really make. Let us prove the advantages of SPEED-WET Discs to you with a free demonstration in your shop.

● **Get this handy body shop reference booklet**
Contains full data, sizes and net prices. Write today for your free copy to Behr-Manning, Troy, N. Y. or for export, Norton Behr-Manning Overseas Inc., U.S.A., New Rochelle, N. Y.
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CORPORATION
division of NORTON Company

- ▲ COATED ABRASIVES
- ▲ SHARPENING STONES
- ▲ PRESSURE-SENSITIVE TAPES

New Products

Continued from Page 260

P203. Floor Mat

Ever-Tred vinyl-plastic link floor matting has been announced as a development of American Mat Corp., Toledo, Ohio. The links are woven on either rust-resisting steel wires or on flexible, vinyl tubing framework for use where subjected to strong acids.

P204. 10-Ton Jack

A new light-weight ratchet lowering lever jack with an aluminum housing has been announced by Templeton, Kenly & Co. of Chicago. Known as the Simplex A1022, the jack is ten tons in capacity, but weighs only 42 lbs. The A1022 is designed to satisfy demands for light-weight versatility in a wide range of general purpose industrial, construction, oil field and railroad uses.

The jack has a minimum height of

20½ in., a 12-in. lift and a broad toe lift with a minimum height of 2 in. The toe lifts the full rated capacity of the jack. It incorporates drop forged and machined alloy steel operating parts, double-lever sockets, adjustable, cadmium-plated springs and links, multiple-toothed pawls, lubricated trunnion bearings and shorter fulcrum centers.

P205. Signal Lamps

Class "A" directional signal lamps, two-faced, 2 in. wide, with a single bulb are finished in black enamel with chrome stripping. The lens is of plastic material eliminating the need for inside reflectors. Sparton Automotive Div., Sparks-Withington Co., Jackson, Mich.



P206. Double Action Pliers

Two new compound-leverage, parallel action pliers are available, one with a wire cutter, both with center-grooved, flat, square jaws. They are finished in chrome with knurled handles. The double action increases leverage and mechanical advantage. Utica Drop Forge & Tool Corp., Clinton, N. Y.

P207. Screwdriver

A miniature screwdriver kit containing a plastic handle and three blades, measuring 3½ in. to 4½ in. long has been introduced by Schneider & Shier, Inc., Chicago. The handle has an aluminum chuck, is shock-proof and non-inflammable.



"Mind if I call you Fred? . . . I talk in my sleep."

Crack Up?

NO! . . . all it needs is LAMSON FASTENERS

Any skilled repair shop could make a brand new truck out of this "wreck"—just by using Lamson Fasteners.

This dramatically points out how important it is for garages and service shops to choose carefully the brand of fasteners they use.

Lamson & Sessions is the world's largest manufacturer of automotive fasteners . . . which is another way of saying "you can't go wrong choosing Lamson"!



The LAMSON & SESSIONS Co.

1971 West 85th Street • Cleveland, Ohio

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WORLD'S LARGEST MANUFACTURER OF AUTOMOTIVE FASTENERS

P208. Work Clamp

A new work clamp has been introduced by the Centinela Industrial Supply Co., Hawthorne, Calif.

The unit, trade-named the Saxton Clamp, combines features of a standard "C" clamp and a toolmaker's parallel clamp. By the use of a ball-bearing trunnion in the clamp, distorting, twisting action is eliminated. The trunnion also absorbs vibration, thus insuring a firm, steady grip throughout machining operations. In operation, the new clamp spins open or closed without effort. An added feature is the three different gripping faces to accommodate all types of holding jobs.

P209. Truck Caster

A heavy-duty truck caster, complete swivel, mounted on 1/4-in. top plate and a lighter, rubber tread caster have been added to the Bassick Series 99. The heavy model has either a 6 in. or a 9 in. wheel while the lighter has a 5 in., or 8 in. wheel, recommended for working over smooth interior floors. The Bassick Co., Bridgeport, Conn.

P210. Parts Carrier

A portable stock unit, mounted on four wheels, suitable for moving small parts and materials from job to job, or stockroom to job without unloading each time for storage, has 100 individual containers arranged in 10 rows on each side of the bin. Containers are attached to support racks by a suspension system which makes it possible to lift them out quickly for stock rotation, replenishment or cleaning. Parts containers are built on the "cash register" principle with rounded bottoms to make the smaller parts, nuts, bolts easier to pick out. The "Porto" unit is 62 in. high, 21 in. wide and 21 in. thick. Service Parts Systems, Inc., Grosse Pointe, Mich.

P211. Face Shield

A face shield with sufficient clearance to be worn over glasses and industrial goggles has been designed and manufactured by The Boyer-Campbell Co., Safety division, Detroit, Mich. The shield is fastened to a form-fitting head gear which may be adjusted to any shape or head size. There are three types of

shields interchangeable on one head gear, a plastic shield for general utility, a fibre front with glass holder for gas welding and a screen window for scaling, heat, etc.

P212. Test Stands

Two new models of the standard King generator and regulator test stand have been announced by King Electric Co., Cleveland, Ohio. The new models are modifications of the GT-15, containing many improved

features, and are designed to meet generator and regulator testing requirements in the passenger car, truck and farm equipment fields.

The main innovation of the new models is the complete elimination of conventional testing leads. Test stand connectors to the generator and regulator are exactly the same as any ordinary vehicle installation. Selector switches provide any desired series of tests in the new units, and the heavy duty carbon pile and field
(TURN TO PAGE 266, PLEASE)



**KENDALL
WHEEL
BEARING
GREASE**

**Compounded for today's
exacting heavy duty service
requirements.**

Performance proven.

**TOUGH - TENACIOUS
RESISTS
CENTRIFUGAL FORCE
WON'T RUN OUT**

**THERE'S A KENDALL
LUBRICANT FOR EVERY
REQUIREMENT**

New Products

Continued from Page 265

rheostat simulate charged and discharged battery for complete tests of generator, regulator and cutout.

Designation of the two new King models is GT-16 for the bench model and GTC-17 for the cabinet model. Standard models are for 6-volt generators only, driving at rated output up to 60 amp. The 6-12 volt model also drives 12 volt generators up to 30-amp output.

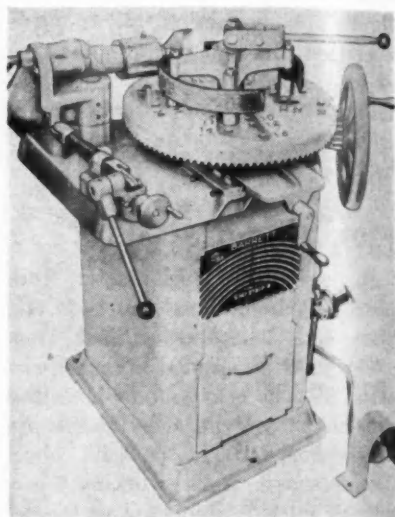
P213. Litter Straps

Litter straps which permit quick conversion of buses from passenger loads to transportation of wounded personnel are now available from Brown-Line Corp., Beverly Hills, Cal. Several arrangements of loads are possible with the litter straps. One tier of six litters can be located overhead without interfering with seated passengers and a second tier can be added by folding down the backs of the seats. With the removal of all seats a total of 18 litters in three tiers is possible, or without litters, the vehicle becomes a

cargo carrier. Where desired, the seats can be stacked inside the vehicle, being held in place by straps also furnished by Brown-Line Corp.

P214. Brake Lining Machine

The Shu-Strip-R, a new machine for removing brake shoe lining at high speed is announced by Barrett Equipment Co., St. Louis, Mo. The manufacturer claims the Shu-Strip-R removes bonded lining at the rate of 150



shoes per hour—riveted lining at 200 shoes per hour. It handles all passenger car and light truck shoes, 9 in. to 16 in. in diameter with up to 3½ in. face. A Pneumatically operated cutter attaches to standard shop air supply. The machine is said to strip shoes so clean that only light sanding is needed to prepare them for new lining.

P215. Paint Baker

A portable baking panel with 24 infra red units is available from Dry Clime Lamp Corp., Greensburg, Ind. Its dimensions are such that it is suited for sectional work in small areas, or where the paint shop space is limited. The unit is mounted on an angle iron frame, supported by four free-wheel casters.

P216. Hand Cream

A new solvent-type hand cleaner, Khemo-Klean, may be used with or without water to remove many types of stains, grease and grime, such as automobile grease, oil paint, carbon, tar, emery dust, and sticky cements.

A small quantity of the jelly-like cream rubbed briskly on the hands causes the solvent emulsion to disperse, liquefy, penetrate, and "lift" the imbedded dirt magically off the skin, according to the manufacturers.

(TURN TO PAGE 268, PLEASE)

ARE DRIVERS "RAILROADING" YOUR VEHICLES?

Handy Governors Will Stop It

Any driver is likely to be less than meticulous in his care of a vehicle he doesn't own. Many feel no compunction about "railroading" your vehicles. Drivers do most of their work away from supervision . . . abuses are hard to correct.

Handy Governor will stop "railroading"—stop practices which run up costs and wear out vehicles before their time.

The savings in tire, fuel, and lubricant costs, engine repairs, brake maintenance and general maintenance are spectacular. Reduced accident and insurance costs are equally important.

Let us show you some figures on savings—and tell you how little it costs to get them.



KING-SEELEY CORPORATION

ANN ARBOR, MICHIGAN

PLANTS AT
ANN ARBOR, SCIO,
YPSILANTI

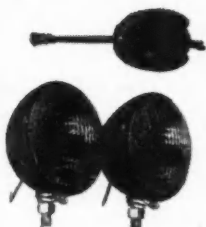
FOR LOWER RUNNING COSTS.

Count on

Guide

FOR COMPLETE LAMP AND SIGNAL EQUIPMENT

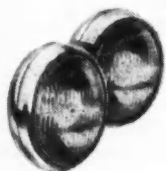
DIRECTIONAL SIGNALS



Guide offers you Class A Type 1 signal that is approved in all states where approval is required. Heavy-duty lamps, self-cancelling switch (switch can also be used manually). For front and rear installations, single face, double face and flush mounting types.

Guide Directional Signals are easy to install and are durably constructed to the highest standards. Guide quality insures dependable service.

FOG LAMPS



Guide Fog Lamps for all makes of trucks and buses are packaged in pairs complete with fused switch and wiring for interchangeable mounting for attachment to splash pan, bumper or front fender. They are designed to meet your every requirement for adverse weather driving conditions. Universal application including late models.

MULTI-PURPOSE LAMPS

The uses for Guide Multi-Purpose lamps are many—it is a spare sealed-beam unit for headlamps, a versatile trouble lamp, a portable spotlight, a handy all-purpose portable lamp. Plugs in the cigar lighter or clips to any current source—13 ft. of lead wire, bracket for carrying can be mounted under dash. Also available with supplementary red lens. No fleet operator will want to be without this Guide innovation.



GUIDE LAMPS

A GENERAL MOTORS PRODUCT



A UNITED MOTORS LINE

DISTRIBUTED BY WHOLESALERS EVERYWHERE

UNITED MOTORS SERVICE

Division of General Motors Corporation

General Motors Building

Detroit 2, Michigan

Check NOW with your Guide Lamp Supplier

Make it a point to check with your Guide Lamp supplier and take advantage of his many fine services. Your Guide supplier and his staff are men of importance in your area and have a complete knowledge of fleets and fleet problems. He is backed by Guide—the world's largest producer of lamps for automobiles, trucks, buses and tractors. You can count on Guide for complete lamp and signal equipment.

YOU CAN DEPEND ON ALL UNITED MOTORS LINES FOR LOWER COST OPERATION

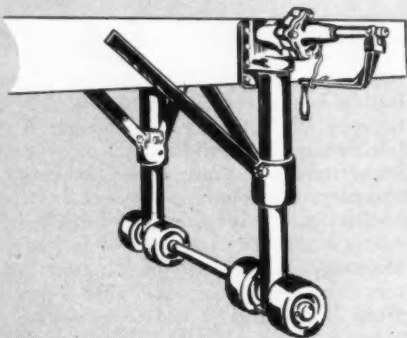
DELCO Batteries
AC GAUGES, Speedometers and Rebuilt Fuel Pumps
SAGINAW Jacks
MORaine Engine Bearings
DELCO Radio Parts
ROCHESTER Cigar Lighters
HYATT Roller Bearings
INLITE Brake Lining
HARRISON Heaters
GUIDE Lamps
DELCO Clocks
NEW DEPARTURE Ball Bearings
DELCO Shock Absorbers
DELCO-REMY Starting, Lighting & Ignition
MORaine Gasoline Filters
HARRISON Thermostats
KLAXON Horns
HARRISON Radiators
ROCHESTER Carburetors
DELCO Hydraulic Brakes

QUALITY
LEADERS
SINCE
1910



*Holland
Engineered*

**TRUCK-TRAILER EQUIPMENT
SAVES MONEY BY THE MILE**

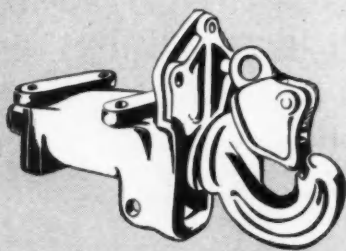


FIFTH WHEELS

All types of fifth wheels to meet every trucking application — including the famous Apgar Safety 5th Wheel that eliminates jack-knives and tip-overs.

LANDING GEAR

Both vertical and horizontal models to satisfy each load requirement.



PINTLE HOOKS

For every use, every load... plus a complete line of towing hooks, towing rings, trailer couplers, king pins and king pin adaptors.

HOLLAND HITCH COMPANY

HOLLAND, MICHIGAN

DISTRIBUTORS IN ALL PRINCIPAL CITIES

**SUPERIOR PRODUCTS ACHIEVED
THROUGH 40 YEARS OF LEADERSHIP**

New Products

Continued from Page 266

P217. Dry Chemical Gun

A new pressure-operated, dry chemical portable fire extinguisher has been announced by Walter Kidde & Co., Inc., New York. The unit answers the need for a small, dry chemical unit which can be recharged easily in the field.

The design of the portable permits it to be serviced following discharge by simply pouring 5 lb of dry chemical into the powder chamber and, with the aid of a gas station or factory air line, charging the unit with 150 lb of compressed air.

The nozzle discharges a cloud-like pattern which is the most effective for extinguishing Class B (flammable liquid) and Class C (electrical) fires. With a range of five to seven feet, the cloud pattern also eliminates the possibility of splashing burning substances as a result of too forceful a discharge stream.

The 5-lb dry chemical features trigger-type finger control, and its wall bracket has a quick-release type latch. Built into the extinguisher's handle is a gage which shows the exact pressure carried by the extinguisher.

Late Product Flashes

Turn signals by K-D Lamp Co., Cincinnati, now redesigned and available in three kits with reflector type installations and two kits with sealed beam type lights suited for various applications.

Spotlight, sealed-beam type for emergency use is available from Auto Lamp Mfg. Co., Chicago.

Metal cleaner, rust inhibiting, organic type has been announced by Pennsylvania Salt Co., Philadelphia.

Soldering gun that heats in three seconds, trigger action, with a built in spot light, is made by Wen Products, Inc., Chicago.

Spark plug connectors snap between waterproofed ignition wires and the plug to provide a hot surface for test clips of various testing instruments. Sun Electric Corp., Chicago.

Surface cleaner, alkaline, for outside surfaces of buses, trucks, etc., has been developed by Pennsylvania Salt Mfg. Co., Philadelphia.

Soft plastic mallets and hammers have been added to the line of plastic materials made by Matticks Mfg. Co., Los Angeles, Calif., graduating in head size from 3/4 in. to 2 in. and weighing from 1 oz to 14 oz.

Chrome cleaner that removes rust and corrosion from chrome and stainless steel is the newest addition to the automotive line of Johnson's Wax.

END

Please Resume Reading Page 67

COMMERCIAL CAR JOURNAL, April, 1952

YOU CAN PUT NEW HEART into ALL OIL FILTERS! *NOW-NEW!* **DELUXE Graduflo CARTRIDGES**

bring **FLEET-PROVEN DeLuxe Oil Cleansing Effect** to Oil Filters with conventional flow!

To these important questions, you can now answer yes!

"...is there a replacement cartridge which has a filtering action that approaches the famous DeLuxe Oil Cleansing Effect for vehicles not equipped with DeLuxe Filters?"

"...can conventional-flow filters obtain many of the important FLEET-PROVEN DeLuxe results which have helped win so many Bus Transportation Maintenance Awards for fleet operators?"

NOW, THE ANSWER IS YES! Now, the **NEW DELUXE Graduflo Replacement Cartridge** brings to **ANY FILTER-EQUIPPED VEHICLE** as much of

this great DeLuxe Oil Cleansing Action as the design of each filter will permit!

The new DeLuxe Graduflo Replacement Cartridge does **MORE THAN JUST FILTER OIL!** It actually cleanses oil and **FIGHTS ACID** at the same time! Here's the same **DOUBLE-ACTION** against both abrasion and corrosion which has made the **GENUINE DELUXE Cartridge** so famous! It means **LONGER ENGINE LIFE!** It means **LONGER-LASTING LUBRICATING OIL!** It means **LONGER CARTRIDGE LIFE!** It means **REDUCED OIL CONSUMPTION!** IT MEANS **IMPROVED PERFORMANCE** from **ANY FILTER!**

Get the full story of the new *Graduflo* Cartridge! See the secret of *Spun-Strand* construction in full detail! Send for **FREE 4-color Graduflo CATALOG** JUST OFF THE PRESS! Reserve your copy TODAY by writing to: **DELUXE PRODUCTS CORP., 1406 Lake Street, LaPorte, Indiana.**



...there still is no substitute for Genuine DeLuxe Cartridges and Oil Filters! It's still the unrivalled combination for Finest Oil Cleansing Results

ONLY the Genuine DeLuxe Combination has the **SPRING** that prevents cartridge collapse!

ONLY the Genuine DeLuxe Combination has the **CONE** that assures uniform oil distribution!


ONLY the Genuine DeLuxe Combination has **FULL-DEPTH FILTRATION.**

ONLY the Genuine DeLuxe Combination has the **NON-AGITATED SUMP** that keeps harmful sludge **OUT OF THE CARTRIDGE!**

ONLY the Genuine DeLuxe Combination has **SEDISUMP**, newest boon to speedier sump cleaning and improved oil filter maintenance!

ONLY the Genuine DeLuxe Combination has such an outstanding performance record with fleets over the past 17 years... winning more honors, year after year in Bus Transportation Maintenance Award Competition... being used as original or optional equipment by more leading bus, truck and tractor manufacturers than any other filter!

For DeLuxe Filters...Always insist on genuine DeLuxe Cartridges!

STILL... "THE  OF THE DELUXE OIL FILTER"

R 8844

Fleetman's LIBRARY



"CREEPING HORROR"

This Tire Was
Ruined By
Over Inflation



Like the rat above, improper tire inflation is insidiously destructive. Each year, wrong tire pressures from inaccurate gauges take an enormous toll in tire mileage.

The Eco Tirelator eliminates the guess-work of obsolete "inflate and test", steps up fleet service and saves manpower. The dial is set (5-110 lb. range), the chuck is applied and tires are quickly, automatically brought up to the exact pressure desired. Units are available in many different models which meet Grade A testing specifications of the American Standards Association.

Write for further details.



JOHN WOOD COMPANY

BENNETT PUMP DIVISION

MUSKEGON, MICHIGAN

JOHN WOOD Est. 1867

THE TRANSPORTATION CORPS: Responsibilities, Organization and Operation, U. S. Army in World War II, by Chester Wardlow. This is a 454-page volume, the Army Department's history of the Transportation Corps. It summarizes the history of the corps in general and offers considerable detail as to how the corps functioned, its tactical problems, how these were met and overcome. The book is available from the Superintendent of Documents, Washington 25, D. C.

HOW TO BUY FLOOR MATTING is the title of a new 8-page brochure just issued by the American Mat Corp., 2018 Adams St., Toledo, Ohio. It gives buyers of floor mats the application best suited to each type of mat as well as the correct type and size to use in various places.

NEW OPPORTUNITIES FOR ADVANCEMENT, is an outline of the three training courses which are offered by Sun Electric Corp., Chicago, Ill., as a non-profit enterprise.

CRAFTSMEN IN SHEET METAL PRODUCTION, a 20-page booklet takes the reader behind the scenes in sheet metal production. In logical order, the various processes of manufacturing are described from the shearing room through to the shipping department. The booklet is published about and by the Lyon Metal Products Inc., Aurora, Ill.

DOLLARS FROM DIAGNOSIS may also be obtained from the Sun Electric Corp. It describes the Sun method of electronic diagnosis and how the system increases the accuracy of diagnosis at a saving in time and labor.

THE SUN CATALOG, listing and describing various electronic testing devices is now available. Over 100,000 of these catalogs were circulated in 1951. For your copy of any of the above, write Sun Electric Corp., 6323 Avondale Ave., Chicago 31, Ill.

EQUIPMENT CATALOG No. 52, lists engine stands, dollies, and accessory equipment now being made by the Automotive Division, Cleveland Pneumatic Tool Co., 3781 E. 77th St., Cleveland 5, Ohio. It includes a stand-selection guide that helps the reader select the equipment best suited to the specific operation. A copy is available from the manufacturer.

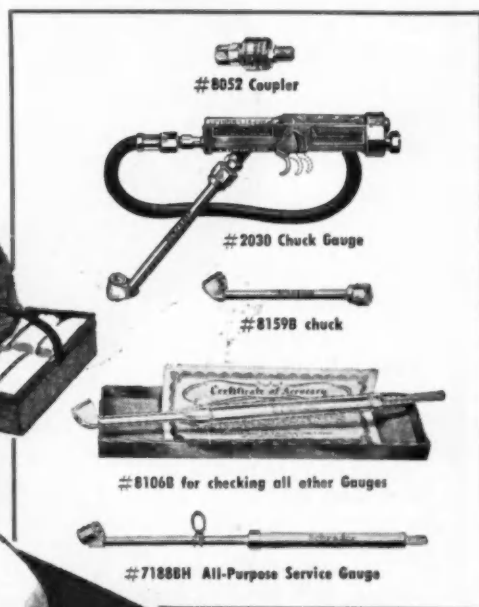
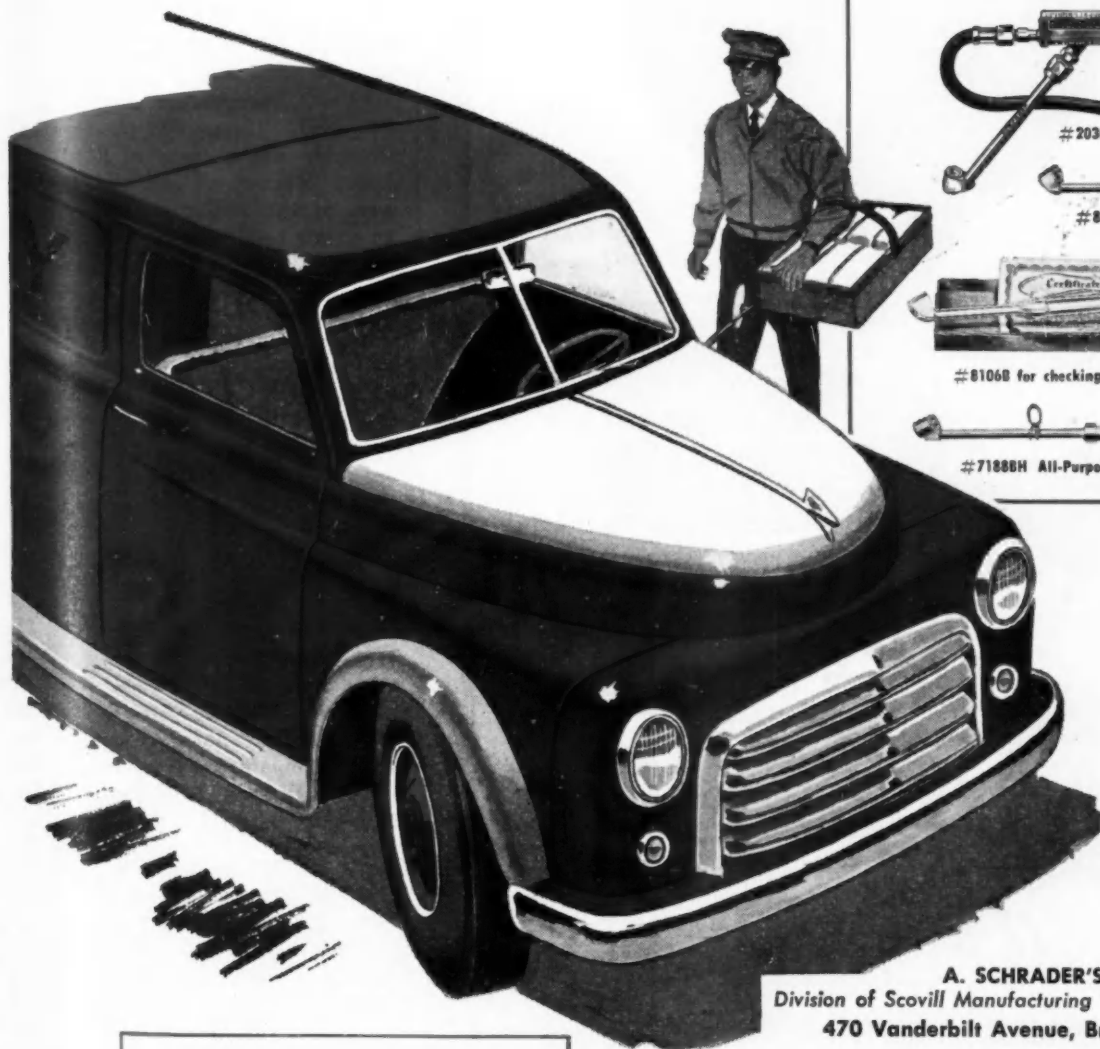
BUTANE-PROPANE POWER MANUAL gives step-by-step directions for converting gasoline engines to butane-propane carburetion. It has the complete story of L.P. gas principles and equipment. (TURN TO PAGE 274, PLEASE)

Delayed deliveries can lose customers

Whether your fleet delivers food or automobiles, you're doing your best to cut costs. Start with proper tire maintenance, and you've taken a big step to avoid stalled loads due to flat tires.

Schrader Products Make Tire Maintenance Economical

Certify the accuracy of your inflating equipment with a Schrader 8106B Trutest Special Gauge . . . and keep your air lines in perfect operating condition with Schrader Air Chucks, Couplers, Chuck Gauges and Accessories. Use the Schrader 7188BH All-Purpose Service Gauge for all your tire inspection work. It's the economical way to get 'em through on time. Ask your supplier for quality Schrader Products.



A. SCHRADER'S SON
Division of Scovill Manufacturing Company, Incorporated
470 Vanderbilt Avenue, Brooklyn 17, N. Y.

Schrader

REG. U. S. PAT. OFF.

FIRST NAME IN TIRE VALVES

FOR ORIGINAL EQUIPMENT AND REPLACEMENT

Fleetman's Library

Continued from Page 272

ment, from the tools needed to final inspection of the installation. The manual is pocket size and is available at \$3.50 from Butane-Propane News, 198 S. Alvarado St., Los Angeles 4, Calif.

PROFIT OR LOSS, the title of two new booklets just released by Magnaflux Corp., Chicago, discusses the expanded laboratory testing of parts and the field

testing available for larger installations. Each tells about the Magnaflux and Magnaglow method of parts inspection and how this inspection will save money.

One booklet provides a list of the inspection stations in 10 principal cities, a list of some of the users of the inspection service, and a list of typical parts which may be inspected by the method. For your copy of these two booklets, write to the main office of the Magnaflux Corp., 5900 Northwest Highway, Chicago 31, Ill., or inquire at any of the field offices.

GRATINGS and stair treads made by Bustin Firm-Grip Grating Corp. are listed and priced in the new catalog now available at the Bustin home office, 110 E. 130th St., New York 37, N. Y.

METCO NEWS, a bi-monthly publication of the Metallizing Engineering Co., gives case histories of parts salvage by using a metallizing process. This edition includes shaft regrinding, machine tool salvage, and how to finish sealed coatings. For your copy, ask for Vol. 5, No. 12. The address is 38-12 Thirteenth St., Long Island City 1, N. Y.

WISCONSIN MOTOR CORP., Milwaukee, Wis., has published its annual report for 1951. Included is a 2-page spread giving the installations to which various Wisconsin engines may be applied.

REHEARSAL FOR DISASTER, the dramatic story of the trucking industry's services to stricken communities in Kansas, Missouri and Oklahoma during last summer's floods, has been published by the American Trucking Associations, Inc., in an illustrated booklet entitled "Rehearsal for Disaster." The 34-page booklet uses 39 photographs to illustrate the likeness of flood conditions, evacuation and rehabilitation work to what might happen in event of an enemy bombing attack on this country, and shows the complete dependence of millions of people upon truck transportation under such conditions.

HOUBLER UNDERCARRIAGE is described in a new bulletin giving information on its design and use for flat beds, vans, high sides, tankers and other transports, of the semi-trailer type. The publisher, is Union Metal Mfg. Co., Canton, Ohio.

MAINTAINING YOUR STUD WELDER is the title of the new maintenance manual being offered by KSM Products, Inc. The handbook is a companion piece to KSM's Operating Manual. The 12-page book contains 8 drawings and charts and 12 photographs. A copy may be obtained by writing to Stud Welding Division, KSM Products, Inc., Merchantville, N. J.

FACTS ILLUSTRATED, now being distributed by the Dura-Bond Engine Parts Co., portrays in text and pictures the differences between the so-called all 'round camshaft bearing and its counterparts, the split and interlock types. Covered in this free booklet are such items as the differences in precision, method of manufacture, profit comparison and other subjects. It is available from the Dura-Bond Engine Parts Co., 725 Loma Verde Ave., Palo Alto, Calif.

Yankee's No. 917 Approved Truck Turn Signal Set: 2 double-face lamps in front, 2 single-face lamps in rear, switch, flasher, wire, hardware.



If it's a



IT LASTS!

7 APPROVED CLASS A DIRECTIONAL SIGNAL STOCK SETS
TO MEET ALL VEHICULAR AND MOUNTING REQUIREMENTS

Write for catalog today.

Yankee Metal Products Corp., Norwalk, Conn.



DID YOU KNOW?

There's NO LIMIT ^{on} the JOBS

You Can BRING-IN with a . . .

HOLMES Model 850



The 850 is shown recovering a new type carrier loaded with Cadillac cars.



Note side pull used to bring loaded carrier up and on the highway.

USERS of a Holmes 850 wrecker will tell you there is practically no limit to what a good operator can do with this big and powerful road unit. The 850 model is the most powerful unit in the Holmes line and as such has the capacity for large and heavy jobs which cannot be economically handled with a smaller wrecker.

This model is of sufficient size and capacity to rapidly recover and bring-in any of today's heavy trucks, large busses, trailers, etc. Each boom has a rated lifting capacity of 15 tons and a pulling power of 35 tons. The entire unit was designed and constructed for heavy duty work and easily handles very heavy jobs without danger of overloading or damage to the equipment. Write today for details on the Holmes 850 model which is the most powerful wrecker yet built.

ERNEST HOLMES CO., Chattanooga, Tenn.





INTRODUCING . . .

...G. WAINE THOMAS, vice president and chief automotive engineer of Continental Motors Corp., elected president of the Internal Combustion Engine Institute for 1952.

...HANS HELME, regional service manager at Los Angeles for Fruehauf Trailer Co.

...ROBERT F. HEALY, as manager of the Chicago, Ill., division of the Van Norman Co., Springfield, Mass., replacing GEORGE DICKINSON who is to be the automotive division sales manager at the home office.



...W. L. VANDE WATER, eastern regional manager of the GMC Truck and Coach Div.

...M. B. MONCRIEF, as manager of the Denver, Col., service branch of the automotive division of Wagner Electric Corp., St. Louis, Mo.

...JOHN E. JARRELL, elected president of Ross Gear & Tool Co., Lafayette, Ind., succeeding ARTHUR F. KANE, who has retired.



...C. A. VENSKE, as sales manager, truck trailer division, Highway Trailer Co., Edgerton, Wisc.

...I. C. MELVILLE, in charge of the Detroit, Mich., sales office of Grey-Rock division of Raybestos-Manhattan, Inc.

...JAMES E. LAWLER, automotive territorial manager for the Seattle-Portland-Spokane, Wash., territory of Martin-Senour Paint Co.



...R. L. MORRIS, director of transport, John Labatt Ltd., London, Ont. Canada.

...B. M. LONG, former sales manager of the automotive division, Globe Hoist Co., Philadelphia, Pa., named vice president in charge of hoist sales.

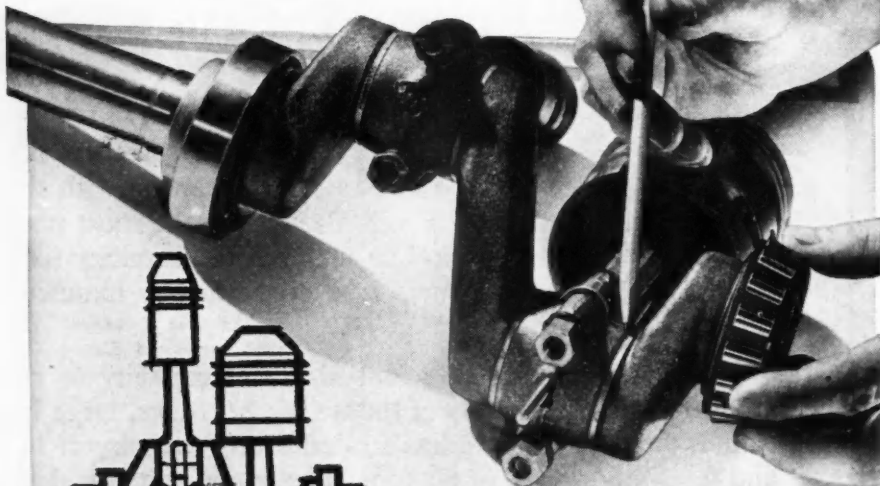
...FRED J. HARTMAN, appointed assistant controller, NORMAN HAMLIN, appointed credit manager, and L. H. KLINE, materials control supervisor, The Gabriel Co., Cleveland, Ohio.

...JOHN K. FARRAR, acting sales manager, Mor-Sun Furnace division of Morrison Steel Products, Inc., Buffalo, N. Y., succeeding GENE BROWN.

(TURN TO PAGE 278, PLEASE)

LISTEN to Your Compressor...

too frequent running costs you money!



Champion's Automotive Type CRANKSHAFT CUTS RUNNING TIME!

Engineers and mechanics quickly recognize the extra quality built into Champion Air Compressors. The automotive type crankshaft with two main roller bearings is but one example of Champion's extra quality. Other extras that cut running time and assure longer compressor life are: exclusive domed pistons and cylinders, specially designed plate valves, automotive type connecting rods with replaceable babbitted bearings and laminated shims for easy take-up. They are superior points of engineering difference that defy comparison. Listen to your compressor... if it is running too frequently it is costing you money by slowing down your air operated tools, using up mechanic's valuable time and running up electrical costs. Get the facts on Champion NOW! See your Champion Jobber Today or write for your free copy of the new informative Champion Catalog.

CHAMPION PNEUMATIC MACHINERY CO.
829 No. Pleasant St., Princeton, Illinois

CHAMPION
AIR COMPRESSORS

CAR WASHERS • AIR HOSE REELS • SERVICE TOWERS • CEILING SWIVELS

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g GEORGE
automotive
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VANDE
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anager of
C. Truck
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the auto-
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resident of
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MORRIS,
of trans-
n Labatt
don, Ont.

anager of
Hoist Co.,
resident in

assistant
appointed
materials
Co., Cleve-

manager,
Morrison
Y., suc-

(E)

April, 1952



switch to
PACKARD *Super Duty* LOW TENSION CABLE
— the ideal replacement cable



Made right, priced right, sold right! Packard's Super Duty Low Tension Cable has an outer covering of braided, black-lacquered seine-twine for extra weather and abrasion resistance. It is designed for and is conscientiously recommended for fleet replacements. Servicewise, it has proved more economical on a per-mile, per-vehicle basis.

Packard Super Duty Low Tension Cable is spooled in both single and two-conductor types and is available in quantity and in a full range of sizes from your Packard jobber.

Packard
REG. U.S. PAT. OFF.
TRADE MARK

Packard Electric Division, General Motors Corporation, Warren, Ohio

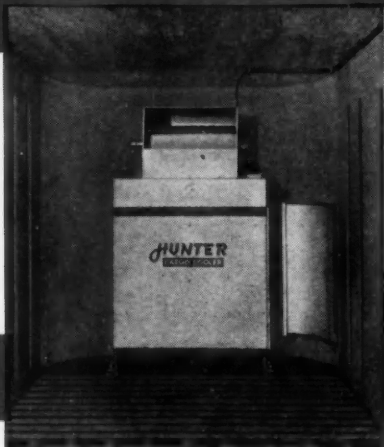
FOREMOST BUILDER OF AUTOMOTIVE AND AVIATION WIRING

"EFFECTIVE • DEPENDABLE • ECONOMICAL



with *Minimum Maintenance*"

**That's why Spector
has standardized
on Hunter Cargo
Coolers for its
refrigerated fleet**



"The Hunter Cargo Cooler has drastically reduced our maintenance expense and has given us completely dependable and effective refrigeration," says William Reib, manager of the Perishables Division of Spector Motor Service, Inc., Chicago, Ill. "It has *entirely eliminated* the need for specialized refrigeration maintenance personnel, an expense we found so excessive that it made profitable operation almost impossible."

Spector ought to know. Spector hauls over 50 million pounds of meat annually between the Midwest and the East Coast, as well as a large volume of pharmaceuticals and merchandise requiring heat protection. Spector is currently using 35 Hunter Cargo Coolers with Heaters (Combination Units) and 15 more are scheduled for installation by June 1.

The Hunter Cargo Cooler requires practically no maintenance because its only moving parts are two blower fans. It utilizes the infallible refrigerating ability of dry ice to fullest advantage through a forced air circulation system, thermostatically controlled and automatically operated to provide safe, dependable, accurate refrigeration uniformly throughout the cargo. It will hold any temperature required between 0° and 60° and makes total road failure of refrigeration an *impossibility!*



Send for Booklet fully describing the Cargo Cooler and its proved performance with all types of cargos.

Complete information also available on the Hunter Cargo Heater, Combination Units and Cab Heater.

These Features Tell Why So Many Fleets are Swinging Over to Cargo Coolers

- * **MAXIMUM RELIABILITY** — eliminating numerous damage claims.
- * **MINIMUM MAINTENANCE**—greatly reduces up-keep and repair expense.
- * **BIGGER PAYLOADS**—the Cargo Cooler weighs only 300 lbs.
- * **QUICK TURN-AROUNDS**—no long tie-ups for servicing.
- * **HIGH CAPACITY**—holds 600 lbs. dry ice, can be re-iced in transit through access door on trailer.
- * **REFRIGERATING ABILITY**—zero to 60°, thermostatically controlled.
- * **COMPACT**—only 19" deep, 48" wide, 75" high.
- * **LOW COST**—low first cost, low operating and maintenance cost.

HUNTER MANUFACTURING CO., 1550 E. 17th St., Cleveland 14, Ohio

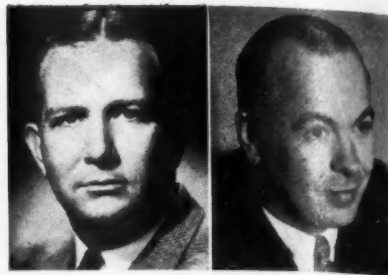
Send me complete information on the Hunter units checked.

☐ CARGO COOLER ☐ CARGO HEATER ☐ COMBINATION UNIT ☐ CAB HEATER

NAME _____

ADDRESS _____

CITY _____ STATE _____



... S. E. BIGGS, general manager of manufacturing (left), and JAMES A. NICKERSON, assistant comptroller and credit manager (right), have been named vice presidents in charge of manufacturing and credits respectively, Trailmobile, Inc.



... WALDO A. SCRUGGS, as general service manager, Highway Trailer Co., Edgerton, Wisc.

... T. R. MOULDER, former motor truck district sales manager at San Antonio, Tex., as manager of the Indianapolis, Ind., sales office, International Harvester Co.



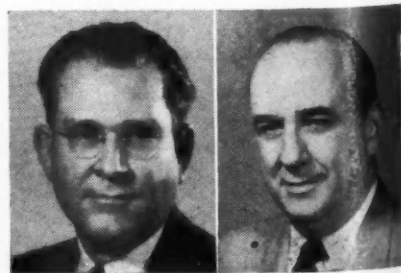
... JOHN T. WEBER, manager of sales development, Cummins Engine Co., Inc., Columbus, Ind., succeeding Howard P. Sharp.

... CHARLES WILLIAMS, appointed regional comptroller for Fruehauf Trailer Co., at Los Angeles, Calif.



... WILLIAM A. BURNS, JR., former vice president and sales manager for the Trailmobile Co., Cincinnati, Ohio, elected president of the company.

... HOWARD K. LANG (left), assistant manager and H. S. RILEY (right), as general sales manager for Toledo Steel Products Co., Toledo, Ohio.



Pathfinder

STATE
APPROVED

LIGHTING EQUIPMENT

Points the way to **FLEET SAFETY!**



Pathfinder

SELECTO-SET

SIGNAL LIGHTS for
light panel trucks and other
delivery vehicles



Illustrated: No. 4301
Fender Mounting Type

Pathfinder

SEALED BEAM...CLASS 1...TYPE "A"

SIGNAL LIGHTS for trucks,
tractors, trailers and busses

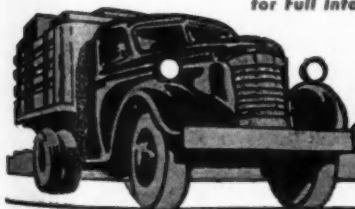
Conform to all S. A. E. Specifications!

EASY to install. Three types (flush, fender type and stud mounting) permit you to make sets to fit most light delivery vehicles. Directional signals flash from clear-lens front lights and red-lens rear lights. Automatic, self-cancelling switch cuts off after turn is made.

SET NO. SC4-369 (Illustrated)

Complete with 2 fender-mounting lights with clear lens and 2 fender-mounting lights with red lens, 21 C.P. bulbs, switch, flasher and wire for complete installation.

See Your Pathfinder Jobber or Write Direct
for Full Information — TODAY!



AUTO LAMP Manufacturing Co.
2700 INDIANA AVENUE • CHICAGO 16, ILLINOIS

FLASH 12 square inches of illumination. Self-cancelling switch provides *automatic signal cutoff* after turn is made (also operates manually).

6 SETS FIT MOST HEAVY DUTY VEHICLE REQUIREMENTS. Easy-to-install set is complete with steering post switch and beam indicator, harness, mounting clamps, flasher, inline fuse, all necessary wiring, and full directions for installing. 6 or 12 volt lamps available.

- Sturdy Black Weather-Resistant Enamel Finish
- Moisture-proof — Dust-proof — Fume-proof
- Sealed-Beam GE Units



FENDER
MOUNTING



SURFACE
MOUNTING



FLUSH
MOUNTING

CCJ LEGAL CORNER



Overloading a Bridge May Mean Buying It

One of Don Chism's trucks fell through a bridge last summer. The truck and trailer loaded weighed about 16 tons and was carrying a bulldozer when the bridge collapsed. It was an old bridge, but looked to be in good condition, being made of

steel and concrete. There were no signs restricting the load capacity of vehicles crossing the bridge.

The town of Little Mackinaw, Illinois, sued Chism for the cost of the bridge, claiming that he had overloaded it and that the blade of the bulldozer had struck one of the trusses causing the collapse.

The judge decided for the trucker, saying that there was not enough proof that the bulldozer blade had actually hit the bridge and that a carrier is not responsible if an apparently safe bridge collapses when he drives across it. In fact, the truck company might be able to sue the town.

If there is no warning sign posting a load limit for a bridge, a driver can assume that it is safe for any load. If he is wrong, it is the fault of the town, county, state, or whoever maintains the bridge. When there is a posted load limit, it means that any loads in excess of that tonnage cross the bridge at their own risk and may be held for the cost of the bridge if it gives way.

Counsel for Little Mackinaw knew this, which is why they tried to show that the bulldozer struck the bridge. If a truck skids into a truss, or the load catches on a cross beam, or there is a collision involving a support, the owner of the vehicle will be held for the cost of the bridge. It may be that one corner of the load only nicks a girder, but if the bridge collapses as a result of that nick, the fleet manager had better prepare to pay for a whole new bridge.

In other words, cross narrow or low bridges cautiously! They are expensive nowadays and since many modern loads are greatly in excess of what a bridge was built to carry, any jar of a support when one of these loads is crossing may cause the bridge to give way.

Third Dimension

THERE ARE TWO SIDES TO EVERY STORY. OUR TRADITIONS HAVE TAUGHT US IN YOUTH, BUT THE TRAFFIC COURTS TEACH A CORRECTION—
THERE ARE YOUR SIDE AND HIS SIDE AND TRUTH!

—Omer Henry

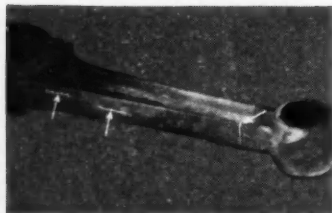


Part-Failure Can Wreck a Business, Too!

The Defect Should Have Been Found During Overhaul by Inspection with MAGNAFLUX-MAGNAGLO

A cracked part returned to a truck, bus, or car at overhaul invites a dangerous or expensive breakdown. The delay may be even more expensive in lost business—and so unnecessary, when MAGNAFLUX-MAGNAGLO inspection will find every defect quickly and cheaply, prevents failure before it has a chance to happen.

When you use MAGNAFLUX-MAGNAGLO inspection during overhaul you can be sure defective parts will not be returned to service. Failures of crankshafts, axles, blocks, spindles and other vital parts can be prevented—by keeping them out of service. Good parts can be proved good, and returned to reliable service. Get complete details today.



Fluorescent Magnaglo indications mark the serious non-visible fatigue cracks in this connecting rod.



Magnaglo inspection of this steering spindle gives clear indication of otherwise invisible serious cracks that could cause failure.

FOR SAFETY... ECONOMY... RELIABLE SERVICE

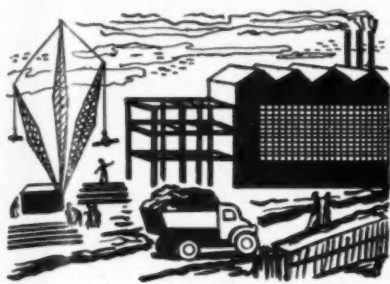
Write today for complete information—for you, and the shop to serve you

Magnaflux-Magnaglo® TradeMarks of Magnaflux Corporation applied to its equipment and materials for magnetic particle inspection.



MAGNAFLUX CORPORATION
5908 Northwest Highway, Chicago 31, Illinois
New York 18 • Cleveland 15 • Detroit 11 • Dallas 9 • Los Angeles 58
Export Distributor: Curtis Wright Corp. In Canada: Williams & Wilson, Ltd.

FACTORY FLASHES



LYNCH CORP. has opened a midwestern district office, Suite 428, at 506 S. Wabash Ave., Chicago, with B. D. Berk as manager and F. G. Lenhart assisting. A new Southern district office at 1036 Peachtree St., Atlanta, Ga., will be under the management of B. J. Scholl, R. W. Graf, assisting.

GENERAL MOTORS CORP., Detroit Diesel Engine division has recently appointed James A. Hall its chief project engineer.

BACHRACH INDUSTRIAL INSTRUMENT CO., Pittsburgh, Pa., has entered the diesel service tool field through the purchase of inventories and production facilities of Curtiss & Smith Mfg. Co., Pottstown, Pa.

FEDERAL-MOGUL CORP., Detroit, Mich., has two new zone warehouses, one in Sacramento, Calif., the other in North Kansas City, Mo. The operations at Sacramento warehouse will begin some time in July, at which time E. G. Jackson will transfer from managership of the Dallas, Texas, district. The warehouse at Kansas City is managed by H. B. Riley, formerly of Kansas City.

FITZJOHN COACH CO., Muskegon, Mich., has a new representative for the southeastern states, C. B. DeBerry with headquarters at Atlanta, Ga.

LINTERN CORP., formerly of Berea, Ohio, has acquired a larger plant in Painesville, Ohio, where operations will begin in April.

TRAILMOBILE, Inc., has announced that S. E. Biggs, its general manager of manufacturing was elected eastern vice president of the Truck Trailer Manufacturers Association at the closing the annual meeting of the association in Houston, Texas.



STANDARD PRESSED STEEL CO., has transferred its Outside Sales department to the main plant in Jenkintown, Pa. This is preliminary to a readjusting of the company's nation-wide sales organization. George A. Gade is the sales manager in this department.

WILLARD STORAGE BATTERY CO., Cleveland, Ohio, has announced the election of C. E. Murray as president, succeeding S. W. Rolph who continues as a member of the board of directors. J. P. Elliott, former editor of sales publications has been named assistant sales promotion manager. He is suc-

ceeded as editor by his former assistant, George A. Denholm.

AUTOCAR CO., Ardmore, Pa., has two new sales and service dealers in Texas. They are the Adams Truck Co., at San Antonio, and the Amarillo Safety Lane, Inc., in Amarillo. Both were formerly White Motor Truck Co. dealers.

OAKITE PRODUCTS, INC., has a new main office at 19 Rector St., New York. The new offices will provide a substantial increase in present facilities for the firm's chemical research and engineering service laboratories.

NIEHOFF trouble-free ignition FOR EVERY TRUCK IN YOUR FLEET!

Rely on Niehoff for dependable ignition for every truck, every trip. Niehoff parts are top quality parts, precision-engineered for fast, easy installation and long, dependable service. All Niehoff parts are catalogued by a single code for every make and model of truck—and warranted for 4,000 miles or 90 days!



C. E. NIEHOFF & CO.

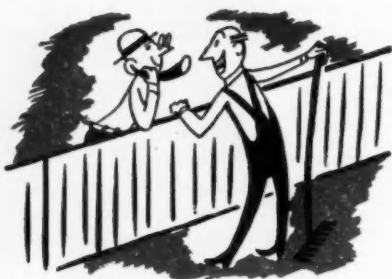
4925 LAWRENCE AVE., CHICAGO 30, ILL.

BRANCHES: BOSTON 34, MASS., 254 Brighton Ave.

LOS ANGELES 15, CALIF., 1330 W. Olympic Blvd. • NEW YORK 19, N. Y., 250 W. 54th St.

NIEHOFF Warranted Ignition

LOCAL NEWS



ST. PAUL, MINN.—The Association of Motor Freight Managers has announced that A. A. Taylor of Service Transfer and Storage Co. was elected president of the association, with A. E. Dybing of Hess Motor Express, William Hughes of Ace Lines, and Donald Whalen of Albrent Freight and Storage Co. as vice presidents. J. L. Gooden, Northwest Freight Lines was elected treasurer, and Daniel Peterson of Consolidated Freightways, secretary. Elected to the board of directors were: Arthur Brown, Central Wisconsin Lines; Robert Boyd, Poole Transfer; Maury Campbell,

Chippewa Motor Freight; Floyd Swanson, Midwest Motor Express; Roy Farah, Union Freightways; and D. C. McMillan, Schumacher Motor Express.

MENASHA, WIS.—Tank truck equipment and operating rights held by Wheeler Transportation Co., have been transferred to a newly formed company, Wheeler Tank Lines, Inc. Dry freight operations will remain under the Wheeler Transportation Co. D. I. Daily, former safety director of Wheeler Transportation has been elected vice president and general manager of the new company, and W. J. Hahn, secretary-treasurer.

BINGHAMTON, N. Y.—George E. Treyz, Sr., founder of the moving and storage company that bears his name, died at his home after a long illness. Mr. Treyz founded the firm, one of the largest in this area, in 1918. It is now operated by his son, George E. Treyz, Jr.

UTICA, N. Y.—A lumbering contractor is not responsible for actions of an independent log-hauling truck operator engaged by him. This is the decision recently returned by Supreme Court Justice William E. McClusky in a case involving a suit for damages involving Clarence J. Strife of Old Forge, N. Y., a lumberman.

CINCINNATI, OHIO—Directors of safety and personnel for motor carriers in the Greater Cincinnati area have organized a fleet safety association. The purpose of the group will be to promote safety in general, and specifically safety in the various local truck fleets. The new organization already has the promise of cooperation from the Cincinnati Police Department, civic and governmental groups. The association plans to sponsor a local telecast in the near future, using that medium to convey their message to the public.

CHARLESTON, W. VA.—Headquarters of the Point Pleasant Transportation Co. have been transferred from Point Pleasant, W. Va., to North Charleston.

ATLANTA, GA.—Anniston Motor Express, Inc., of Anniston, Ala., plans to open a terminal in Atlanta as soon as legal barriers are hurdled.

COLUMBUS, OHIO—Ohio's new law requiring freight-type trucks and trailers to be equipped with rear-wheel mud flaps is a valid exercise of state policing power and does not contravene constitutional rights of motor freight carriers. That is the substance of a decision just handed down by the U. S. District Court for southern Ohio in a test proceeding brought by Tom's Express of Wiernton, W. Va.

(TURN TO PAGE 286, PLEASE)

**FAST, SAFE
DEPENDABLE**

**PORTABLE
HYDRAULIC JACKS**

- Scientific Design
- Precision Construction
- Rugged Performance

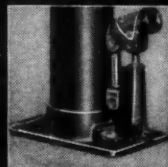
Seven Models—3, 5, 8, 12, 20, 30, and 50 tons capacity



Self-Locking Screw
With Integral Cap



Extra-Strength
Cylinder and Ram



Break-Proof Base
And Pump Barrel

• For the finest in rugged, fast-acting portable hydraulic jacks, standardize on Ajax. Whether you need a tool box truck or bus jack . . . a heavier duty unit for shop service . . . or a 30 or 50-ton brute for power bending and straightening—Ajax has a model to handle your requirements. In times like these, you'll find it more important than ever to standardize with one source for long jack service—for economical service—for dependable lifting equipment that will outlive the "emergency." See your Ajax Jobber.



**AJAX AUTO PARTS CO.
RACINE, WISCONSIN**



"THE COVERAGE LINE" OF FINEST QUALITY JACKS

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ASE)

April, 1952



2-ton shown with 15-foot van body—1½-ton also available

KEEP ROLLING AT LOW COST WITH A STUDEBAKER TRUCK

It's the gas-saving design of a Studebaker truck that makes it a stand-out money-saver. A Studebaker truck's rugged structure is free from burdensome excess weight. Stop in at a dealer's showroom. Examine a Studebaker truck closely. You can see why it saves.

Decorative and other specifications subject to change without notice.



On the job day-in, day-out! You invest in performance you can trust when you buy a sturdy Studebaker truck. Every model is built with wear-resisting soundness by America's most painstaking truck craftsmen.



Driving is a pleasure in a Studebaker truck. Big visibility windshield and windows. Adjustable seat with Adjusto-Air cushion. Floor ventilators and window wings. Steering post gearshift on light-duty models.



Cab steps enclosed for safety! Low floor. Doors have automatic "hold-open" stops—close securely on tight-grip rotary latches. "Lift-the-hood" accessibility to the ignition, engine and instrument panel wiring.



There's a size just right for hundreds of hauling requirements—½, ¾ and 1 ton pick-ups and stakes—rugged 1½ and 2 ton models. Studebaker Econ-o-miser or Power Plus engine.

©1952, Studebaker, South Bend 27, Indiana, U.S.A.

Local News

Continued from Page 284

OMAHA, NEB.—Lloyd C. Dell, general traffic manager for Fairmount Foods Co., has been elected president of the Omaha traffic club.

DES MOINES, IOWA—Driver Donald Sampson, Colonial Baking Co., Fort Dodge, Iowa, received "Driver of the Month" from the Iowa Motor Truck Assn. for saving the life of an injured motorist by applying first aid.

TRENTON, N. J.—A recent report indicates that three out of every five vehicles using the New Jersey Turnpike are from out of the state.

PEORIA, ILL.—Raymond L. O'Brien, traffic manager for Allied Mills has been elected president of the Traffic Club of Peoria.

SAN ANTONIO, TEXAS—Appointment of Jack Weatherford as terminal manager for the Strickland Transportation Co. of Dallas has been announced recently. Strickland has a new warehouse and terminal in San Antonio.

BOSTON, MASS.—The Truck-By-Mail program is being promoted in New England to hold down the rising rail costs for this service and to deliver the mails in much faster time. Edward J. Kelly general superintendent of the first division made this report recently.

CHICAGO, ILL.—Nearly a dozen trucking firms in this area have been asked by Major George A. Quinlan, director of Cook County highway department, to eliminate excessive noise along the new Edens Expressway from Foster Ave., on the city's north side to the Cook-Lake County line.

INDIANAPOLIS, IND.—Roger Gullans, 28, a driver for Eastern Motor Express, has been honored for his part in helping to save the life of Army nurse Barbara Kenworthy. Her automobile plunged into a creek early in February near Brazil, Ind. He dove into the water, opened the car door, and pulled Miss Kenworthy to safety.

NEW YORK, N. Y.—Morris Forgash, United States Freight Co., is chairman of the trucking and taxicab division for the city's Cancer Crusade drive. This is the sixth year he has served in that capacity.

HIGHLAND PARK, N. J.—Karl Mueller, Philadelphia terminal manager for Riss, Inc., Kansas City, and an instructor in the Philadelphia Traffic Managers' Institute, was guest speaker at a recent meeting of the Central New Jersey chapter of Delta Nu Alpha transportation fraternity.

COLUMBIA, S. C.—The Atlantic Coast Line Railroad has inaugurated over-the-road truck service on less-than-carload traffic to and from a number of South Carolina points.

SCRANTON, PA.—An amended plan of reorganization for the Richards Motor Freight Lines was filed recently with bankruptcy referee Albert H. Aston at Wilkes-Barre, Pa.

GRAND HAVEN, MICH.—Trucks were responsible for the job of moving the principal buildings of Agner, a 100-year-old community near Grand Haven, Mich. The project was required to make room for the widening of Routes U.S. 31, which parallels the eastern shore of Lake Michigan from the top of the peninsula to the Indiana line. The town was moved about a mile to a new location on Route U.S. 50. Midwest Transportation of Muskegon did the job.

NEW BRITAIN, CONN.—Art Hoelzer, former traffic manager of the Whitney Chain & Mfg. Co., has been appointed operations chief of the Farmington terminal, Spector Motor Service.



You can't go wrong buying the sales leader! **SOL-SPEEDI-DRI**

To lead its field, a product must give *best value for the money*, all factors considered. That's exactly what you get with SOL-SPEEDI-DRI—and that's why more firms buy SOL-SPEEDI-DRI than any other oil and grease absorbent. Send coupon today for free sample and literature about how to improve the appearance and safety of your garage or service station by "dry cleaning" with SOL-SPEEDI-DRI.

Warehouse stocks maintained in principal cities of the United States and Canada.

Inquirers in New York, New England, and New Jersey should write to Speedi-Dri Corp. Elsewhere in U.S. to Waverly Petroleum Products Co., 1724 Chestnut St., Philadelphia 3, Pa. In Canada, G. H. Wood & Company Ltd., Toronto. Branches throughout Canada.

SPEEDI-DRI CORP., 210 W. Washington Sq., Phila. 5, Pa.

FREE SAMPLE:

Fill out the coupon and mail today for free sample and literature.

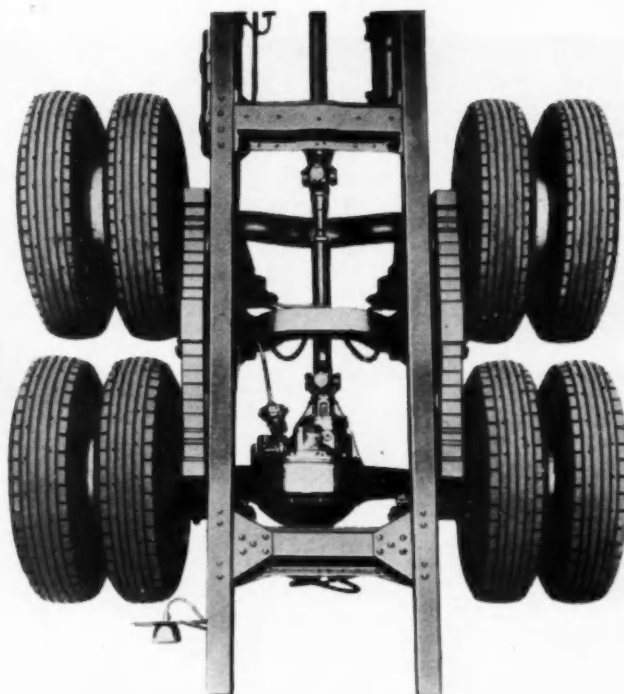


Name _____
Address _____
City _____
State _____

CCJ 4-52



New *Super* LOAD-BOOSTER third axles Outperform All Other Types



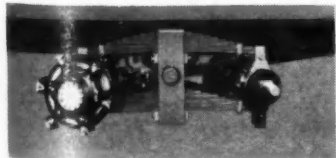
Rugged! Durable! So Economical!

This original, heavy-duty highway hauler with driving axle at the rear of the non-driving axle, usually permits 100% extra payload capacity with increased traction, less road shock and operation economy for all makes of trucks and tractors.

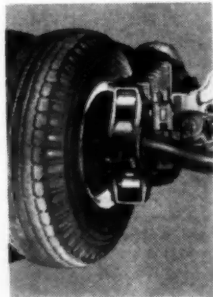
Notice the clean, simple "tailored" silhouette of the unit—no dangling cables, wires or rods.

With a full range of capacities, the **LOAD-BOOSTER** third axle unit is ideal for highway truck operators in these vocations: Interstate Trucks, Building Supplies, Beverages, Moving Van, Gasoline, Refrigeration, Steel, Livestock, Bulk Milk, Chain Store Groceries, Farm Produce, Fuel Oil, Grain, Ice, Insulation, Lumber, Malt, Meat, Plate Glass.

Available through 70 domestic distributors



Special walking-beam TORQ-LEAF springs protect truck and load against road shocks. Springs now consist of 9 plates—3½" wide x ½" thick . . . with double-wrapped spring eyes. New type spring hanger box with multiple wedge tighteners.



Detail of TORQ-LEAF spring eyes and spring hanger and wedge construction. TORQ-LEAF springs are capable of handling motors without torque limitations.

HILL LINES GET 100,000 MILES ON third axle Tires



Mr. A. Hill, President, Hill Lines in Amarillo, Texas, reports:

"... now have 6 units in operation . . . our first unit has approximately 100,000 miles on it . . . none has been in for any type of maintenance except normal greasing . . . are experiencing 100,000 miles on tires of **LOAD-BOOSTER** axle . . . have found your units of exceptional quality."

Investigate Today!

Date _____ 1952

Gentlemen:

I'd like to know more about your new **Super LOAD-BOOSTER third axles**. Please send full information.

Name _____

Company _____

Address _____

City _____

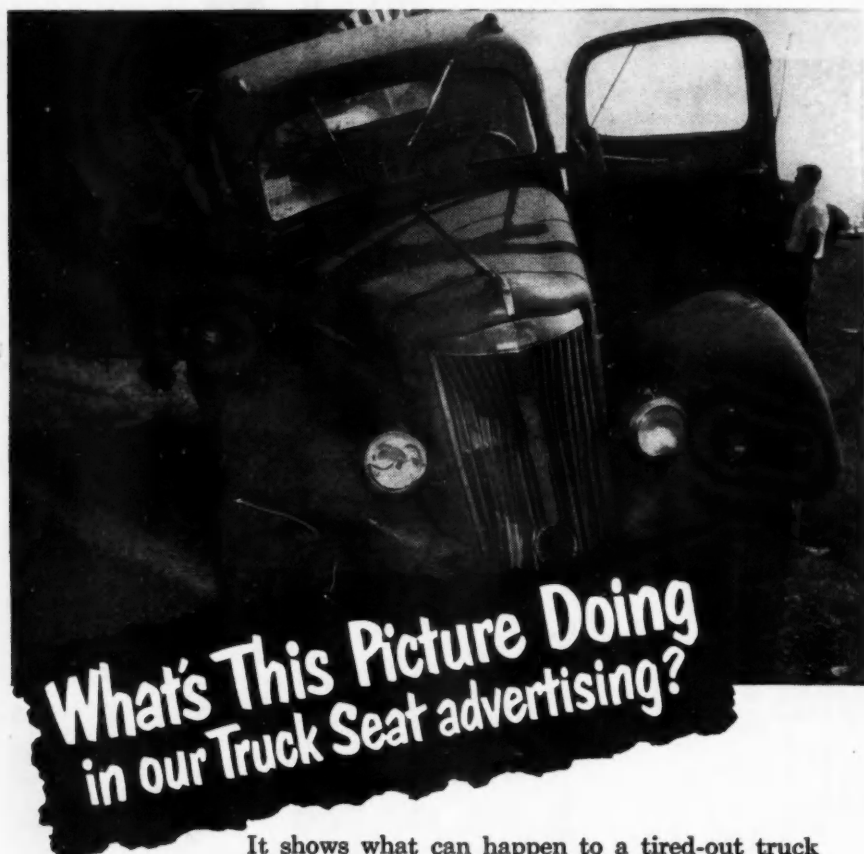
TRUCK Year and Model _____

DETROIT AUTOMOTIVE PRODUCTS CORPORATION

Manufacturers of THORNTON four rear wheel DRIVES and NoSPIN Differentials

8701 GRINNELL AVENUE

DETROIT 13, MICHIGAN, U. S. A.



**What's This Picture Doing
in our Truck Seat advertising?**

It shows what can happen to a tired-out truck driver—and did you know that *truck drivers are involved in 1/3 of all accidents caused by fatigue?*

MONROE E-Z Ride* Truck Seats Keep Operators Fit and Alert

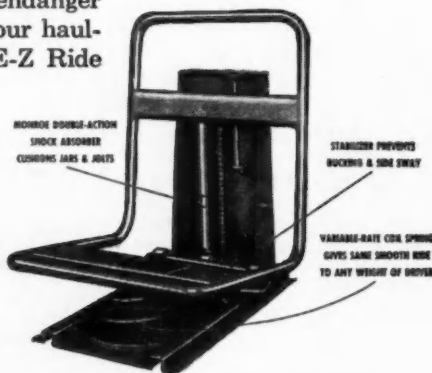
You don't have to worry about your drivers taking a beating from bad roads when your trucks are equipped with Monroe E-Z Ride Truck Seats. This wonderful comfort feature literally soaks up the bumps . . . cushions the driver against fatiguing jolts and jars. It's the only truck seat that automatically adjusts to the driver's weight and gives the same smooth ride to every operator.

Don't let "driver dis-ease" endanger your operators or threaten your hauling profits. Install Monroe E-Z Ride Seats in your trucks now.

**Reg. U.S. Pat. Off.*



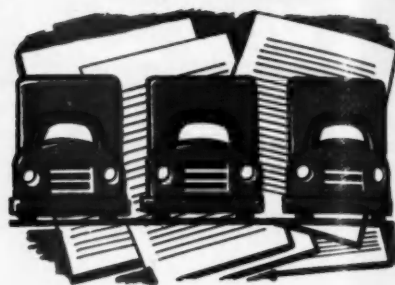
E-Z RIDE TRUCK SEAT
with cushions removed



MONROE AUTO EQUIPMENT CO.

Monroe, Mich. — World's Largest Maker of Ride Control Products

FLEET NOTES



SPECTOR MOTOR SERVICE, INC., Chicago, reports that Edward Lattimer, the vice president and manager of the company's St. Louis terminal has been appointed a member of the board of directors. Leonard C. Joyce is the new manager of operations for the Chicago terminal.

COASTAL TANK LINES, INC., York, Pa., has announced the death of Vice President Mark E. Monroe. This fleet recently won national honors, having completed more than ten million miles of safe truck driving in 1951.

P. B. MUTRIE MOTOR TRANSPORTATION is now occupying the new general offices and terminal located at Calvary St., Waltham, Mass. The new terminal will have a rail siding, with facilities and equipment to handle the unloading of rail tank cars for local distribution.

JOHNSON MOTOR LINES, INC., have honored 182 drivers for safe driving during 1951.

CONSOLIDATED FREIGHTWAYS, Portland, Ore., reports that death came to Albert W. Schappert, vice president and treasurer, member of the board of directors, in February. He was 44 years old.

CLEVELAND CARTAGE CO., Cleveland, Ohio, reports that the merit system of advancement which the company has adopted has recently shown proof of its effectiveness when Thomas A. Harrison (left) and Thomas E. Weir (right) were advanced to administrative head of safety and personnel and to assistant maintenance superintendent and personnel respectively.



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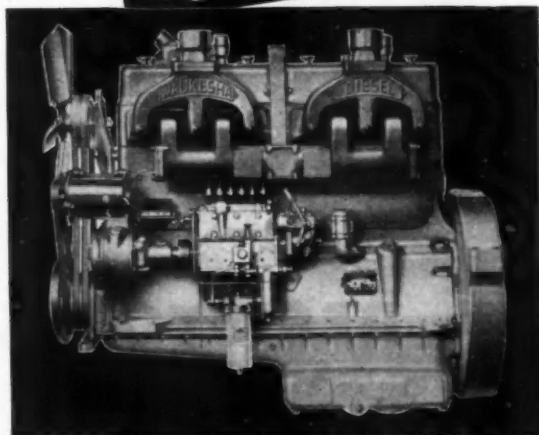


il, 1952



...PAYLOAD POWER WAUKESHA Diesel

● Where hauling is heaviest, and hardest... where turns twist, and grades are steep and stiff—Waukesha Super-Duty Diesels take trucks through, and come back for more. Waukesha has put all this payload performance into its Diesels—by 25 years of Diesel development and research—with many exclusive Waukesha features. The patented spherical combustion chamber controls combustion to meet operation needs—giving the engine lively responsive acceleration, smoothness and complete clean burning for high fuel economy and low maintenance. For the *how* and *why* Diesel details, send for Bulletin 1415.



WAKD Super-Duty DIESEL—6 cylinders, 6¼-in. bore x 6½-in. stroke, 1197 cu. in. displ.

162

WAUKESHA MOTOR COMPANY, WAUKESHA, WIS. • NEW YORK, TULSA, LOS ANGELES

Legislative Roundup . . .

of latest developments at Federal, State and local levels

▼ A QUICK ROUNDUP of legislative and administrative developments in the various states shows a wide variety of laws recently put into effect or

in process, many of which directly effect the commercial vehicle operator. The following highlights have been gleaned from commercial news sources

You make a better hose assembly with

RESISTOFLEX GAS-OIL HOSE and REUSABLE COUPLINGS



BECAUSE . . . it has the famous hose liner that won't rot, clog, kink or collapse. Make a longer lasting, low pressure line for gas, oil, and diesel fuels. And make it with only two end wrenches, on the spot. Just cut hose to length and assemble with the rugged, 2-piece, reusable Resistoflex couplings with safety seal.

Popular as ever . . . the Resistoflex

LINEMAKER KIT

It contains coil of hose and reusable couplings to make up lines for every installation except hydraulic brakes. In an excellent, handy cabinet.

RESISTOFLEX
CORPORATION
Belleville 9, N. J.



Limited number of warehouse distributorships still available

in addition to daily reports submitted by the National Highway Users Conference.

Highways in National Spotlight

AT THE start of the year, President Truman in his budget message to Congress stated:

"The Nation's highways require major improvement if they are to handle adequately the steadily increasing levels of motor vehicle traffic. Partly as a result of the steel shortage, this program will remain below the authorized annual level of \$500 million, with expenditures estimated at \$412 million in the fiscal year 1952 and \$400 million in 1953.

"Within this program, special emphasis is being placed on the interstate highway system, a limited network of roads most essential to both civilian and defense highway traffic."

With regard to Federal-aid authorizations, he said "A new authorization of \$400 million annually—\$100 million below the present authorization—should enable the Government to discharge this responsibility."

A report was received about the same time that a "sufficiency rating system" for highways was adopted by the Bureau of Public Roads to help substantiate its quarterly requests to the Defense Production Administration for highway steel.

The system is a scientific mechanism whereby a numerical value is applied to a specific section of road after an engineering analysis of the highway's structural condition, safety features, and its ability to give service have been analyzed. For a complete discussion of the rating system, see COMMERCIAL CAR JOURNAL, December, 1951, Page 64.

States Enact New Laws

ARKANSAS: Ten non-resident trucking firms have attacked the validity of the 1949 law that imposed a gross revenue tax on operations in Arkansas. They charge that the law is unconstitutional because it attempts to compel them to pay an excise or privilege tax for the purpose of transacting a "wholly interstate business" within the state.

GEORGIA: Governor Herman E. Tamm, in his message to the legislature, said that the rising traffic load incident to the growth of the state is becoming more and more of a problem. He said that automobile registrations have more than doubled from 400,000 vehicles in 1945 to over a million in 1951 and that "it is imperative that we move immediately to meet the problem."

(TURN TO PAGE 292, PLEASE)

COMMERCIAL CAR JOURNAL, April, 1952

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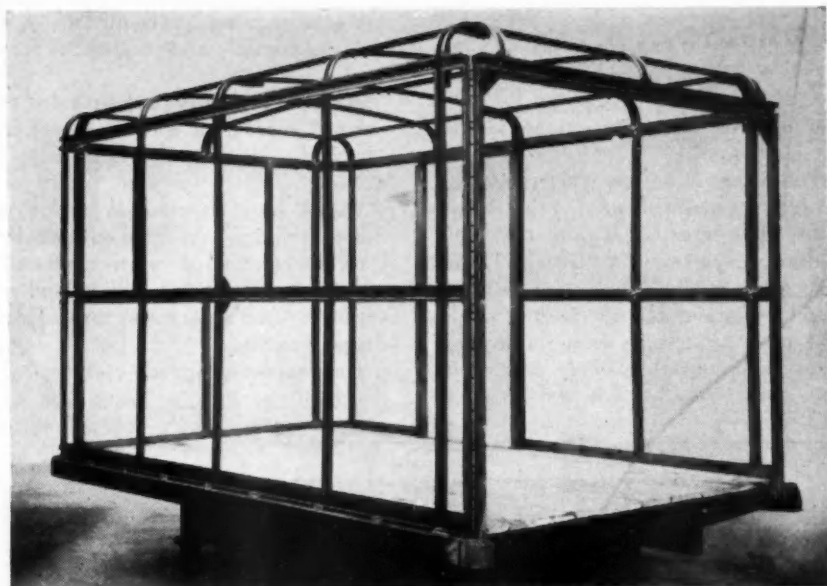
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HERE'S WHY

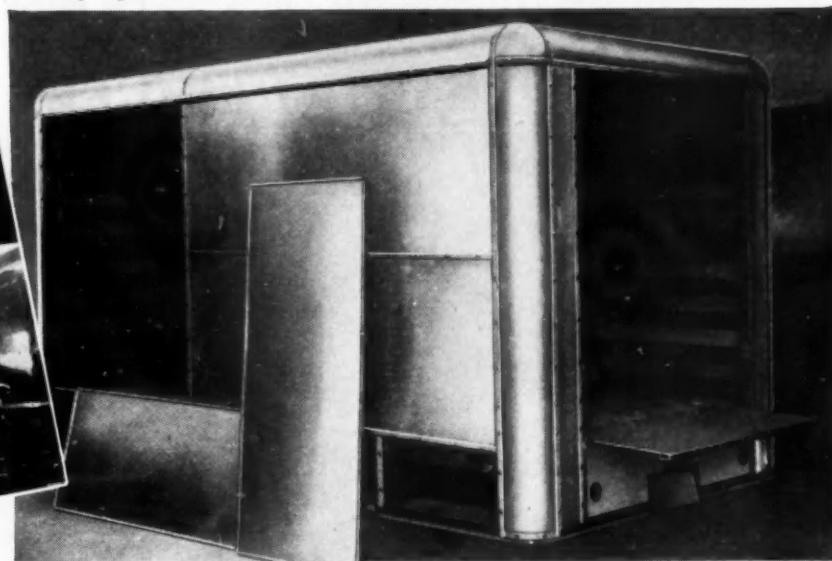
a Truck Body
Built of
LINDSAY
STRUCTURE
is Your
Best Buy



All LS components are die-formed.



Sturdy framework is assembled from standardized LS parts to exact body size and style you need. LS bodies can be built to within 1/4-inch of any length.



Pre-tensed LS panels give body rugged strength—provide attractive wrinkle-free exterior. If damaged, sections can be quickly replaced from the outside.

The Lindsay method of truck body construction means double value for you!

Your truck body built of Lindsay Structure pays in first cost... pays in over-all cost. Here is why—

First—you get the operating efficiency possible only with a body engineered for your job. Lindsay Structure bodies are not "prefabricated" but are built to your exact needs from *die-formed standardized LS components* fabricated in 78,085 panel sizes.

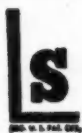
Second—this careful standardization of LS parts means fast, low-cost repair. In case of accident, damaged sections can be quickly

replaced from the outside—most replacement parts are carried in stock by LS Body Manufacturers and are immediately available.

More than 200 body manufacturers in the United States and Canada use Lindsay Structure for their made-to-measure truck bodies.

Ask your nearby LS Body Manufacturer today for information on one of these handsome all-metal bodies *built for your job*—the body that pays dividends year after year in efficient low-cost operation. If you do not have his name and address, write

LINDSAY
STRUCTURE



Lindsay Structure, Inc.
5000 West Dempster St., Skokie, Illinois

U. S. Patents 2017629, 2263510, 2263511
U. S. and Foreign Patents and Patents Pending

Legislative...

Continued from Page 290

lem of ever increasing congestion on our highways."

Following close on Governor Talmadge's recommendations, the Legislature has created within the state highway department a "Georgia Turnpike Authority." This section will construct, maintain, and operate toll roads. The projects will be financed by revenue bonds payable solely from tolls and other revenues derived from the

use of such roads. The Authority will also construct and maintain feeder roads.

Another legislative act provided that the toll road from Florida Line to St. Marys, Ga., be extended to other points as well.

Other laws enacted in the Peach State included one that declared as contraband and subject to confiscation and condemnation, all vehicles and conveyances used in transporting narcotic drugs illegally.

Hand-and-arm signals conforming to the Uniform Vehicle Code have been

approved, and a vehicle equipped with such signal devices may use these in lieu of the hand-arm requirements.

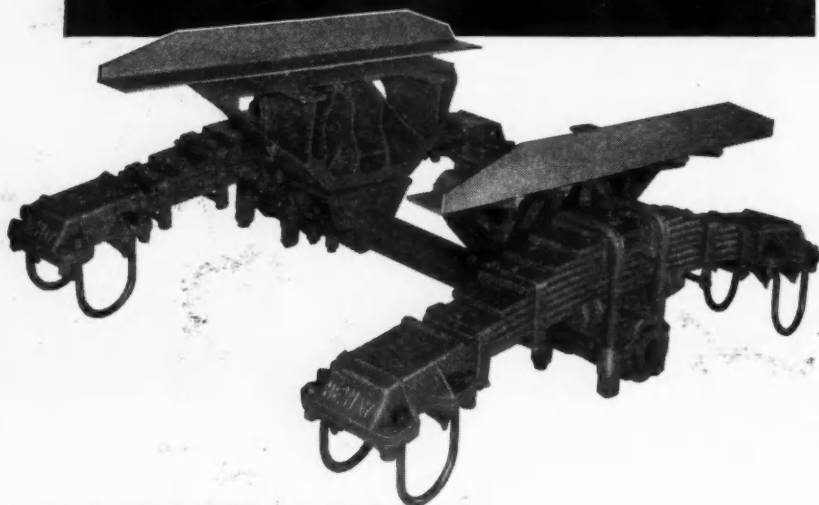
COLORADO: A change in the structural set-up of the state makes the Department of Highways a branch of the executive department, abolishes the Highway Advisory Board and the office of Highway Engineer. A new eight-man commission with an office of chief engineer has been created. The commission will spend all funds credited to the Department of Highways.

ILLINOIS: The Chicago City Council has revoked a portion of an ordinance adopted in 1951, which established separate license fees for tractors and semi-trailers. As a result of this revocation, tractors and semi's will continue to be recognized for license purposes as one unit. Fees range by weight from \$22.50 to \$112.50, with buses paying annual fees of \$75.

KANSAS: Kansas and Illinois have entered into a reciprocity agreement to permit free movement of two types of trucks in the two states. Household goods movers may enter the state free if they are licensed in their home state. All other trucks except common carriers operating on regular routes may enter the state without fee if they do not enter the state of non-residents more than three times in any one month or more than 25 times in any one year.

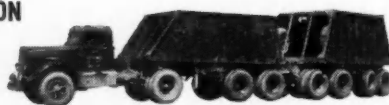
MASSACHUSETTS: In a statement made early in the year, Governor Paul A. Dever said it will not be necessary to enact new taxes in Massachusetts. He renewed his recommendation that the functions of the Rating Bureau for compulsory motor vehicle insurance be taken over by the Insurance Commission. (TURN TO PAGE 294, PLEASE)

NO lubrication with the NEWAY TANDEM SUSPENSIONS



- EASY RIDE AND EASY HANDLING
- NO ROAD-HOPPING OR TIP-OVER ACTION
- NO RADIUS RODS TO ADJUST
- PERMANENT ALIGNMENT
- LOAD EQUALIZED BETWEEN AXLES
- THOROUGHLY ROAD TESTED AND PROVEN IN SERVICE

Operators report as many as 200,000 miles of service with no maintenance expense or down time. The Trunnion shaft is mounted on two rubber bushings, eliminating the necessity of lubrication at this point. Prove to yourself as others have, that NEWAY EQUIPMENT can cut your operating costs. See your NEWAY DEALER today. Send for Bulletin No. 62.



NEWAY Equipment Company

Muskegon, Michigan, and
201 S. E. Washington St., Portland, Oregon
ALSO MANUFACTURERS OF THIRD AXLES FOR TRUCKS AND TRACTORS

Civilian Defense Attacks



Charging into the principal cities in the nation, the "Flying Squadrons" shown above will present dramatic exhibits on the general urgency of adequate civilian defense. The exhibits are carried aboard a group of Trailmobile semis. In the top picture, a typical convoy of tractor-trailers pause in Washington, with the Capitol dome behind as a fitting backdrop. The lower picture is a close-up view of one of the units

VELVETOUCH LASTS LONGER



... because it's All-Metal

Designed especially for use wherever frequent starts, stops and overloading cause excessive clutch plate wear . . . experienced operators replace with Velvetouch. Because Velvetouch lasts longer! Being all-metal, Velvetouch clutch plates run cooler . . . require fewer adjustments . . . give you added miles of smooth, trouble-free service. For more facts about how Velvetouch can cut costs, contact your jobber, our nearest branch . . . or The S. K. Wellman Co., 1374 E. 51st St., Cleveland 3, Ohio.



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ern Ave., Chicago 8, Illinois

PHILADELPHIA—1545 West
Belfield Ave., Philadelphia, Pa.

CLEVELAND—1392 East 51st
St., Cleveland 3, Ohio

PORTLAND—636 N. W. 16th
Ave., Portland 9, Oregon

DALLAS—3407 Main Street,
Dallas 1, Texas

SAN FRANCISCO—424 Bryant
Street, San Francisco 7, Calif.

EXPORT DEPARTMENT—
8 So. Michigan Ave.
Chicago 3, Ill., U. S. A.
WASHINGTON OFFICE—
1101 Vermont Ave. N. W.
Washington 5, D. C.

Legislative ...

Continued from Page 292

sioner's office, and that insurance companies be assessed the cost of maintaining it. He also said: "Additional bond issues will be required if we are to continue with our highway program."

A bill enacted by the legislature makes it possible for counties to protect their employees against loss if they are sued for damages caused while they are operating county-owned vehicles.

Of particular interest is the fact that the House of Representatives unanimously rejected a ton-mile tax levy. This proposal section was one included in a report to the legislators by the Highway Committee.

MICHIGAN: A bill has been signed into law which authorizes refund of 1½ cents per gallon on gasoline used in vehicles operated over regularly traveled routes under municipal permits.

MISSOURI: A reciprocity agreement between Missouri and Iowa covering common and contract carrier vehicles operating in interstate commerce be-

came effective in February. This brings the total to 24 states with which Missouri has such agreements.

Bills increasing Missouri's gasoline tax rate from 2 to 3 cents a gallon and boosting truck and bus fees were given final passage by the Missouri Legislature.

NEW JERSEY: Senator Alfred B. Littel has proposed appointment of a committee to re-examine New Jersey's highway policy. After conferences with Governor Driscoll and the State Highway Commissioner, a measure was offered to create an examining committee of nine members. The Senator stated:

"The last legislative re-examination of highway policy was in 1927. Obviously a policy set down a quarter of a century ago is now outdated, and in many cases is not adequate for present highway designing."

He said that he hoped the committee will be able to report to the present session.

The proposal of Highway Commissioner Ransford Abbott to increase the gasoline tax by one cent met with cool reception. The plan calls for the funding of a bond issue, later to be paid from tolls extracted from the New Jersey Turnpike and other toll roads and bridges now in the proposal state. At the same time, the Turnpike Authority has announced that the present Turnpike travel has far exceeded predictions, and that additional traffic lanes are under consideration.

NEW YORK: State Supreme Court Appellate Division has upheld the state's mileage tax rejecting contentions of truck operators that the law was unconstitutional. The action was brought by the Empire State Truck Operators and Allied Industries Committee. (For latest details see page 31.)

A bill passed in March defines what an engine number is. For registration purpose, the engine number will include the vehicle identification number serving both the vehicle and the engine.

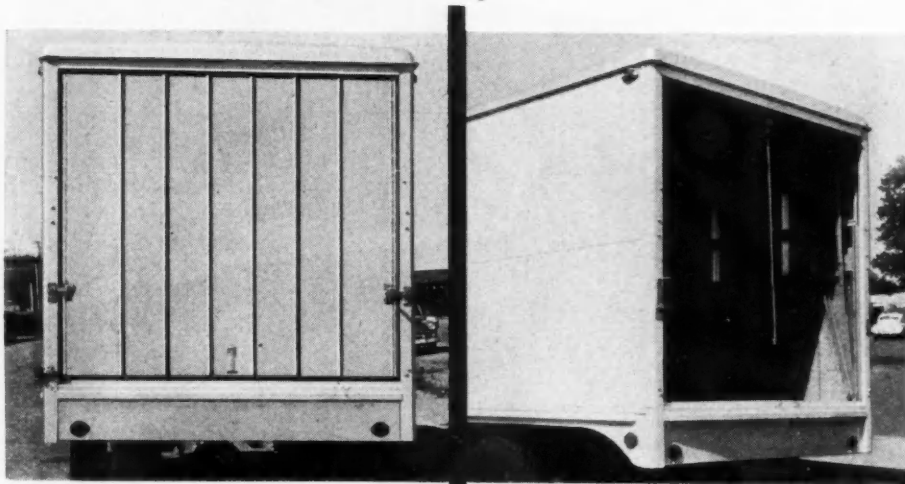
At press time, a bill was introduced in the Senate which proposes to extend to all persons, provisions of the vehicle code which require proof of financial responsibility before DMV will issue registration certificates or assign number plates. The bill also increases from \$5,000 to \$10,000 the minimum liability insurance for one person and from \$10,000 to \$20,000 for one accident, with \$5,000 for property damage.

PENNSYLVANIA: Legal barriers have been crossed for the continuance of the Pennsylvania Turnpike System. A continuance has been authorized from some point west of the Susquehanna to (TURN TO PAGE 296, PLEASE)



TRUK-A-DOOR...

Custom Built to fit ANY Truck or Trailer

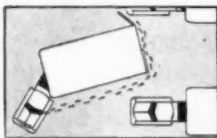


Locked in closed position, Truk-A-Door can not come open until locks are released by driver.

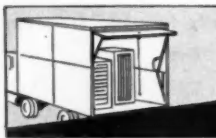
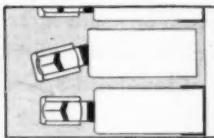
Easy to open—just unlock door and it swings out and up until fully recessed. It automatically locks in this position until released.

IN USE BY MANY OF THE NATION'S LARGEST FLEET OPERATORS

Truk-A-Door is exclusively for trucks and trailers. . . . Ruggedly built of 20 gage steel, it is reinforced with bracings of 18 gage steel. . . . Completely weather proof. . . . All hardware is made to rigid specifications to take punishment of constant opening and closing. . . . Hardware is protected by special guards in case of load shift. Should the load shift against the door it will still open with the same ease.



Driver does not have to leave cab to open door before spotting truck or trailer, saving many hours each day of driver's time.



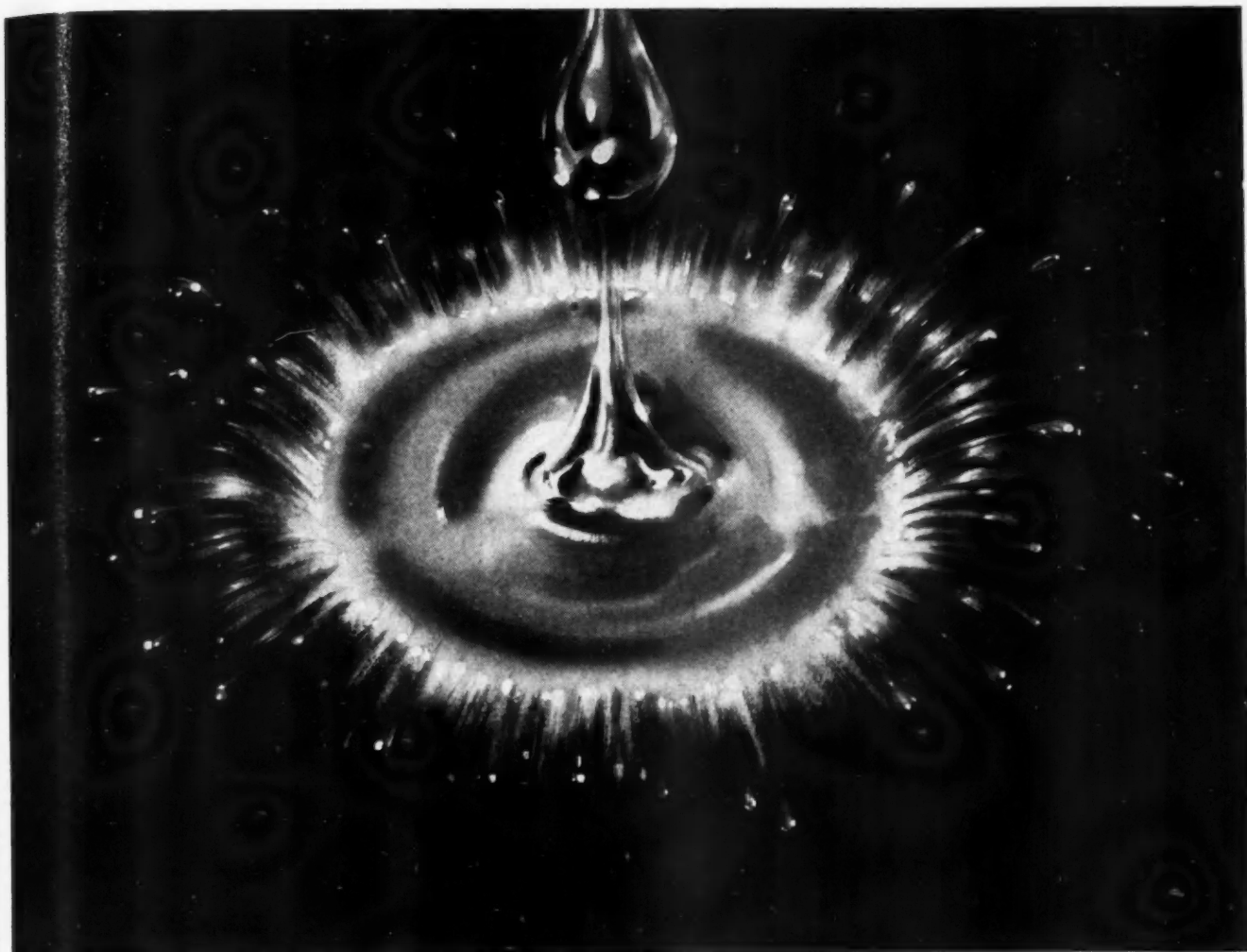
Truk-A-Door is opened easily after spotting and closed while truck or trailer is still at dock. No costly accidents to keep equipment off the roads.



Get detail information—write, wire or phone

TRUK-A-DOOR COMPANY

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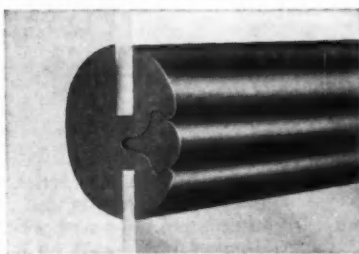


Just look at that drop of water!

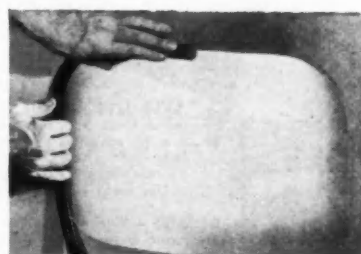
A single drop. But look at the impact, the splash, the driving force! Then multiply it by the millions of drops that strike windshields and fixed windows. And add the blast of air that hits a speeding vehicle. No wonder that ordinary sealing methods, with cement or binders, *will leak!* But *not* Inland Self-Sealing Weather Strip, using only the natural resilience of rubber, permanently compressed!

You'll save money when replacing broken glass because Inland Strip makes it a fast, one-man job . . . returning the vehicle sooner to profitable operation. You can have it in every new vehicle you order. Just specify it!

INLAND MANUFACTURING DIVISION
General Motors Corporation • Dayton, Ohio



1. Cross-section of Inland Weather Strip.



2. Set the Inland Strip in the body panel.



3. Slip the glass into the Inland Strip.



4. Zip the filler strip into the channel.



Self-Sealing Weather Strip

(PATENTED)

COMMERCIAL CAR JOURNAL, April, 1952

295

Legislative...

Continued from Page 294

a point near the Maryland-Pennsylvania border. Plans are also under way for extension of the Turnpike's eastern end from King of Prussia to the New Jersey Turnpike at a point near Bordentown.

Another enactment in Pennsylvania has made stricter provisions for vehicles and trailers carrying logs. The load must be securely bound by acceptable and safe binders.

Trailers have been placed under the present vehicle financial responsibility law.

Registration periods for trucks, truck-tractors, trailers, semi-trailers, and buses will be from June 1 to May 31 the following year, beginning with the 1954 registration year. Right now the period is from April 1 to March 31.

A new statute requires the Department of Public Instruction to set-up standardized driver training courses in schools.

OREGON: Clackamas County has issued an order requiring registration

of all vehicles over 16,000 lb gvw and requiring a \$10 fee. An appeal is in progress to stay the enforcement of the ordinance.

SOUTH CAROLINA: Governor James F. Byrnes made no tax recommendations in his annual message to the legislature except that no exemptions from the general sales tax should be granted.

A new law now on the books provides for a definite system of financial responsibility for vehicle drivers. The same measure authorizes the revocation of driver licenses of all persons failing to satisfy accident judgments.

An appropriation of \$36,537,000 has been approved for the State Highway Department for construction, operation and maintenance of highways.

UTAH: While there is no immediate prospect of a special session of the legislature, there is a probability that one will be held some time during 1952 to take up problems incident to liquidation of the state employees' retirement system in favor of the Federal Social Security Law.

VIRGINIA: Governor John S. Battle recommended no new taxes in his annual legislative message, nor did he suggest any reduction. One reduction was noted, however, unemployment compensation tax to one tenth of one per cent. He urged re-examination of roadside advertising laws and tightening of the highway safety provisions.

Of notable importance is a recent joint resolution of the Virginia legislature which took a definite stand against the diversion of highway funds to other uses.

(TURN TO PAGE 300, PLEASE)

WE WILL BE PLEASED TO WELCOME YOU AT BOOTHS 610-611
NEW ENGLAND REGIONAL AUTOMOTIVE SHOW IN BOSTON

POSITIONING PROBLEMS?
One of these **AEROL** products
will solve them!



AXLE AND ENGINE STANDS
More than a dozen models—one of which is exactly right for your shop! Clayborne Stands are now AEROL products—the best in the industry.



DOLLIES—Five models for every shop and showroom problem. Use for teardown, assembly of parts and accessories, storage, steam cleaning, shop movement and display.

LIFT KITS—This is one of nine basic kits and limitless combinations of parts for every shop lift need—automotive or industrial. One- and two-ton capacities with ample safety factors.



LIFTS—One of two versatile AEROL LIFT models. Either will remove, position and install engines, transmissions, differentials, drive lines, axles, springs, gas tanks, crankcases, universal joints, tires, etc.

YOU'LL GET EASIER, faster, safer and lower-cost handling and positioning of automotive units with AEROL Service Equipment. And you'll get it at a price you can afford!

Send for your copy of the new AEROL catalog today. You'll find out *which* of these products you need, *how* it can help lick your shop costs.

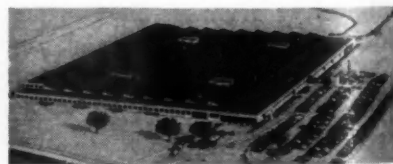
AEROL Automotive Products are made by The Cleveland Pneumatic Tool Co., and sold only through jobbers. Distributed in Canada by Vic Mathewson Co., Toronto 14, Ontario.

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Automotive Division
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Timken's New Plant



The Timken-Detroit Axle Co., Ohio Axle & Gear division has started production for military contracts in a plant located at Newark, Ohio. It occupies nearly 400,000 sq ft of floor space in a single-story building of saw-tooth construction. The factory will constitute an integrated manufacturing unit for machining, heat treating and assembly operations complete with a metallurgical laboratory. At full capacity there will be about 1600 persons employed. For the immediate future, the entire output of the new plant will be for national defense.

Nationwide Service in Genuine *Life* Parts

ALABAMA
Birmingham Lawson Auto Parts Co.

ARIZONA
Phoenix Automotive Sales Co.
Truck Equipment Co.

ARKANSAS
Little Rock Automotive Supply Co.

CALIFORNIA
Bakersfield Bakersfield Brg. & Motor Supply
Pioneer Mercantile Co.
El Centro Valley Auto Supply Co.
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Eureka Kramer Auto Supply
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Long Beach Curtis & Christenson
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Santa Maria Hanson Equipment Co.
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COLORADO
Denver Brake & Clutch Service

CONNECTICUT
Branford Branford Automotive Supply Co.
Bridgeport Charles Friedman Co.
Hartford National Parts Service
The McCallum Motor Service
New Haven Nizen Motor Parts
Waterbury Shore's Auto Parts

DISTRICT OF COLUMBIA
Washington May's Brake Service
Tri-state Motor Service

FLORIDA
Tampa Auto Parts Co.
Miami Patten Sales Co.

GEORGIA
Atlanta Genuine Parts Co.
Hasty Brothers Company
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ILLINOIS
Bloomington C. A. Sandborg & Son
Chicago Auto Clutch & Parts
Central Truck Parts Co.
Illinois Auto Truck Co.
Merit Truck Parts & Wheel Co.
Midwest Truck & Auto Parts Inc.
Mutual Truck Parts
Standard Unit Parts
Joliet Trackman Auto Supply
Kankakee Paul Lang & Sons
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IOWA
Clinton Roe Craddock's Service

INDIANA
Evansville Evansville Auto Parts Co.
Fort Wayne Central Motor Parts
Indianapolis Central Motor Parts Co. Inc.
Joint & Clutch Service
Eagle Machine Co.
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KANSAS
Kokomo Murray & Davis
Muncie United Parts Co.
Terre Haute Wm. O. Hensley Truck Parts

KENTUCKY
Ashland Barney Williams Co.
Hopkinsville J. B. Cook Auto Machine Co.
Louisville Atlas Auto Parts & Grinding Co.
Mayfield J. B. Cook Auto Machine Co.

LOUISIANA
Shreveport Aldridge & Co.

MAINE
Houlton Houlton Motors
Portland Motor Supply Inc. of Portland

MARYLAND
Baltimore Ancorp Automotive
C. V. Foster Equipment Co.
Hyattsville Ancorp Automotive

MASSACHUSETTS
Boston Boston Clutch Works
Motor Supply Inc.

Brighton Automotive Parts & Equipment
Brookline Machine Co. Inc.
Franklin Auto Supply
Brookline L & M Motor Parts Co.
Cambridge Motor Supply Inc.
Superior Motor Parts Co.
Fall River Wm. T. Manning Co. Inc.
Fitchburg Christie & Thomson
Framingham Christie & Thomson
Lawrence General Supply Co.

Lowell Towers Motor Parts Corp.
Somerville Everett Avenue Auto Parts
Springfield Auto Gear & Parts Co.
Worcester Christie & Thomson

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Ann Arbor Auto Parts Co.
Detroit Automotive Parts Co.
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Grand Rapids Neal's Automotive Parts
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Jersey City M & G Auto Supply
Wishbow Brothers
Morristown Clinton Square Auto Parts Co.
N. Brunswick Clinton Square Auto Parts
Newark Clinton Square Auto Parts Co.
Mack Boring & Parts
Orange Clinton Square Auto Parts Co.
Jersey Distributing Inc.
Passaic A. A. Brake & Clutch Service
Paterson A. A. Brake & Clutch Service

NEW MEXICO
Albuquerque Pound Brothers

NEW YORK
Albany Albany Universal Auto Parts
Detroit Supply Co.
Amsterdam Detroit Supply Co.
Binghamton Cook Bros. Truck Parts
Bronx Coretti-Gross Inc.
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Brooklyn Howell-Treiber, Inc.
Buffalo Balco-Pedrick
Division Tire and Auto Parts, Inc.
Geneva Gordon Motor Parts
Glens Falls Detroit Supply Co.
Hempstead Hempstead Machine Works
Kingston Detroit Supply Co.
Long Island City Seldon Parts Corp.
Mount Vernon L. Earl Miller
New Rochelle Westchester Brake & Clutch
Nyack Nyack Auto Parts
New York (Manhattan) Republic Auto Parts
Oneonta Detroit Supply Co.
Peekskill Inter-state Auto Parts
Poughkeepsie Detroit Supply Co.
Rochester Fasino's Service
New Deal Auto Parts
Rochester Bearing & Supply
Rochester Clutch Service
Schenectady Detroit Supply Co.
Schenectady Universal Auto
Staten Island Eveready Automotive
Syracuse Syracuse Auto Parts
Troy Detroit Supply Co.

Utica Genuine Auto Parts

NORTH CAROLINA
Charlotte Motor Equipment & Service
Raleigh Carolina Auto Parts
West Durham Commercial Parts Corp.
Winston Salem Carolina Garage
Wilmington MacMillan & Cameron

NORTH DAKOTA
Fargo Smith, Inc.

OHIO
Akron Hi-Way Truck Equipment Co.
Standard Motor Parts
Canton City Tire and Supply Co.
Lamb's Auto Supply
Cincinnati Gilbert Automotive Parts
Universal Joint Service
Cleveland Automotive Parts Co.
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Automotive Parts Co.
Columbus Ohio Auto Parts
New Philadelphia Reliable Auto Parts
Sandusky Asher Brothers Co.
Steubenville Genuine Parts Inc.
Toledo Toledo Clutch & Brake
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OKLAHOMA
Oklahoma City Standard Parts Co.
Yow Brake & Clutch
Tulsa Edens Brake & Clutch Supplies
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OREGON
Bend Moty & Van Dyke
Coss Bay Littrell Supply Co.
Eugene Geo. Myrmo & Sons
Klamath Falls Juckeland Tr. Sales & Serv.
Medford Littrell Parts Co.
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PENNSYLVANIA
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Altoona Automotive Supply Co.
Ambridge Motive Parts Co.
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Dormont Motive Parts Co.
Etna Motive Parts Co.
Homestead Motive Parts Co.
Johnstown Automotive Supply Co.
Motive Parts Co.
Lansdowne Auto Gear & Parts
McKeesport Motive Parts Co.
McKees Rocks Motive Parts Co.
Philadelphia Auto Gear & Parts
Continental Motor Service
Pittsburgh Genuine Motor Parts
Motive Parts Co.
Reading Auto Parts Co.
Rochester Motive Parts Co.
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RHODE ISLAND
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TENNESSEE
Clarksville J. B. Cook Auto Machine Co.
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Dyersburg J. B. Cook Auto Machine Co.
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Johnson City Range Auto Parts
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TEXAS
Abilene Service Parts Co.
Amarillo Elmer Auto Supply
Beaumont Auto Radiator & Parts Co.
Corpus Christi Alphin Supply
Dallas Bearing, Brake & Clutch
Motor Parts Depot
El Paso Dave Hill Wholesale Automotive
Fort Worth Automotive Industrial Supply
Houston Fleet Service Co.
Mountjoy Parts Co.
Motor Parts Depot
John Muller Co.
Universal Joint Service
Longview Industrial Power & Supply
Lubbock Lubbock Automotive Supply
Odessa Service Parts Co.
Pharr Truck Parts Supply
San Antonio Mountjoy Co.
W. W. Auto Supply
Snyder DGD Auto Supply
Texarkana Wadel-Connally Hardware Co.
Waco Ford-Hanna Co.
Waco Automotive Supply
Wichita Falls Brake, Bearing & Clutch
Wichita Engineering Co.

UTAH
Salt Lake City Koepsel & Love

VIRGINIA
Norfolk Standard Parts Corp.
Richmond Standard Parts Corp.
Roanoke Standard Parts Corp.

WASHINGTON
Raymond F. C. Foster Co.
Seattle Motor Parts Machine Co.
Northwest Motor Parts
American Machine Co.
Spokane Auto Clearing House
Tacoma

WEST VIRGINIA
Charleston Baldwin Supply Co.
Engine Sales & Service
Clarksburg Craig Motor Service
Parkersburg Harries Auto Electric

WISCONSIN
Eau Claire MGL Motor Supply
Green Bay Green Bay Auto Parts
LaCrosse Pengra Brothers
Milwaukee Motive Parts & Machine
Motor Grinding & Parts
Mutual Truck Parts
Standard Units Parts

ONTARIO, CANADA
Toronto Colonial Traders Ltd.

REPUBLIC OF MEXICO
Mexico City Guajardo Motors y Cia, S. A.

Legislative...

Continued from Page 296

Local Ordinances Noted

THERE are some municipal ordinances now on the books which may directly affect the fleetman, especially those who cross state lines.

CLEVELAND, OHIO, has provided for the declaration of an emergency during heavy snowstorms, enacting special parking regulations applicable

during such periods and authorizing the prohibition of non-essential vehicles.

RACINE, WIS., outlaws all-night parking, but authorizes the Police Department to issue special privilege permits costing \$4 per month.

COLORADO SPRINGS, COLO., forbids the use of exhaust cut-outs and regulates the various types of mufflers used by motor vehicles.

EL PASO, TEXAS, has established truck routes through the city and made it illegal to leave these truck routes except to load or unload. There are also special permits required to move in designated areas, and other permits

needed for certain class trucks in the business area. No overnight parking.

BATTLE CREEK, MICH., has tightened its laws concerning the issuance, handling and disposal of traffic violation tickets.

ELIZABETH, N. J., prohibits the operation of motor vehicles equipped with flame throwing devices.

MINNEAPOLIS, MINN., now prohibits the use of the streets, alleys and sidewalks for loading, reloading, or the transfer of merchandise from one vehicle to another.

BIRMINGHAM, ALA., forbids the obstruction of public streets by trucks while loading and regulates the use of approved materials for back-filling in certain congested areas.

CLEVELAND, OHIO, is considering enactment of a law requiring all commercial motor vehicles weighing over three tons to be equipped with suitable protectors to prevent the rear wheels from throwing water and . . . mud flaps to you and me.

Safety Equipment Proposals

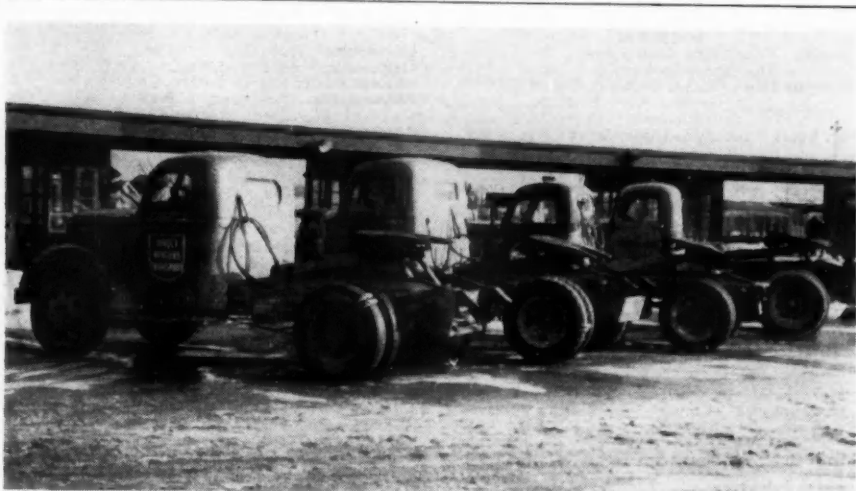
A RESUME of the various states which will be, or are hearing proposals to require changes in customary truck safety equipment shows that they will fall into three major categories.

FENDER FLAPS may be required in various dimensions and heights, should bills now before the legislatures be passed. These states include: Kentucky, Massachusetts, Michigan, Georgia, Missouri, New Jersey, and Virginia.

TURN SIGNAL DEVICES would be mandatory in Michigan when the outside limit of the vehicle body is more than 24 in. to the left of the center of the top of the steering post. A Missouri bill would require such devices when the body or load extends 32 in. or more to the left of the center of the steering post. A supplementary measure under consideration would make the width measure 24 in. on the same plane plus the specification that should the body or load be more than 14 ft. from the steering post, devices will be required.

POLARIZED VIEWER AND HEADLAMPS: One polarized viewer and two polarized headlamps supplemented by two non-polarized passing lamps would be required in Massachusetts on new vehicles and in New York on all vehicles operated after Jan. 1, 1955, according to pending legislation.

OTHERS: There are other do's and don'ts on the fire. Vertical exhaust pipes may be required for all diesel units in Massachusetts. Governors may also be required of all commercial vehicles (TURN TO PAGE 302, PLEASE)



How Truckers Using Ambassador Bridge Solve Switching Problems

AMBASSADOR Bridge Terminal, Windsor, Ontario, handling the largest volume of truck traffic at any port of entry in the world, had a real problem in trailer switching.

To get the trailers through the Customs before the quitting deadline required rapid movement of the trailers. By the old hand-crank method many shipments were de-

layed for hours. This situation has been completely remedied by the use of Pollard Hydraulic 5th Wheels.

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You can install an Aero-Seal any place you can reach with your thumb and one finger. Integral construction... no screws to lose. Screw-driver slot and thumb-grip types.



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Legislative...

Continued from Page 300

hicles in the same state, with a 60 mph speed limit. In Georgia, for-hire carriers over 30 ft. in length would have to be so equipped. Oh yes, no television receivers will be permitted in vehicles in Kentucky and South Carolina.

Financial Responsibility

STATE lawmakers are showing increased interest in legislation designed to provide protection against the financially irresponsible motorist. Proposals to enact new financial responsibility laws or strengthen existing laws have been introduced in the legislatures of a dozen states.

A safety responsibility law (Act No. 752) has been enacted in South Carolina and will go into effect Jan. 1, 1953. Bills also in substantial conformity with Act IV as it now stands have been introduced in Rhode Island (H. 619-S. 58) and New Jersey (S. 3).

Bills to tighten existing laws have been introduced in Arizona, Kentucky, Michigan, Mississippi, Missouri and New York, while proposals to set up committees to study the various phases of financial responsibility are being considered in Massachusetts (H. 159-H. 1223), New York (HR 109) and Virginia (SJR 3).

Bills which would require a showing of financial responsibility as a condition to issuance of automobile registration or drivers' license or both, have been introduced in Arizona (H. 61), Kentucky (H. 19), Maryland (H. 43), Mississippi (H. 13), New Jersey (H. 250), New York (H. 1722-S. 2050), Rhode Island (H. 639) and Virginia (S. 26-H. 372). Similar proposals were last year rejected by the legislatures of at least twenty states.

In Massachusetts, the only state which now has compulsory insurance, at least 34 bills to amend or repeal the law have been introduced, illustrating the difficulties inherent in such a system.

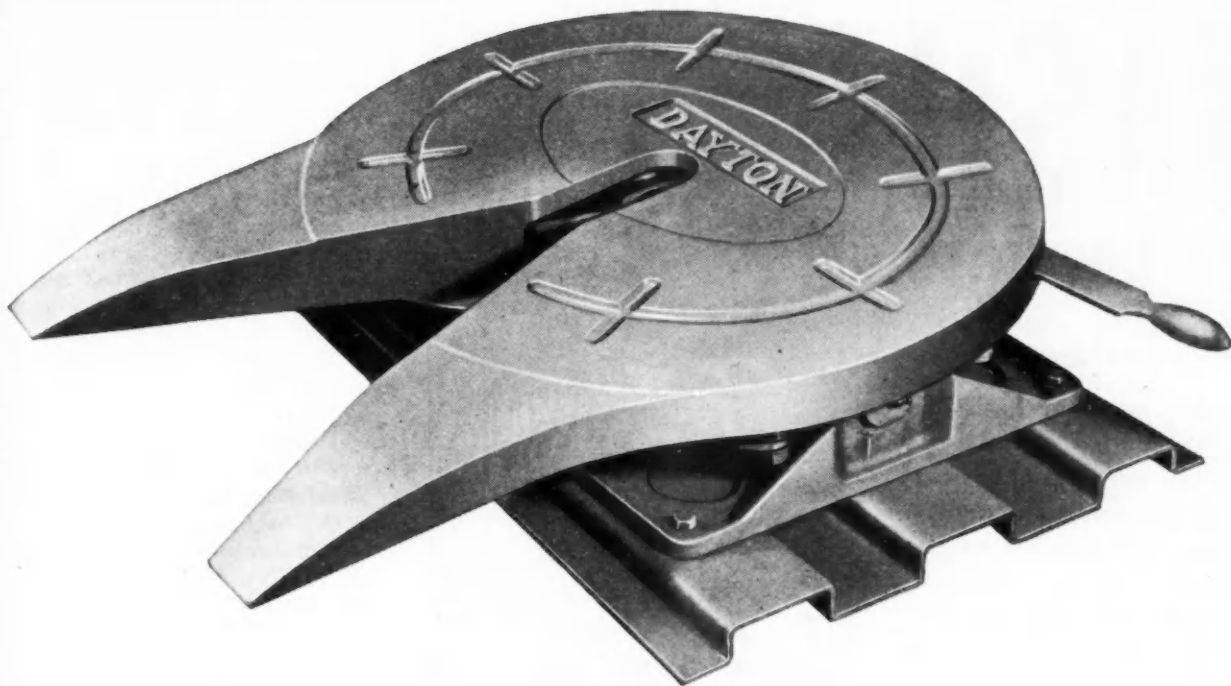
Two state legislatures, Michigan (S. 20) and New Jersey (S. 2) have proposals to establish unsatisfied judgment funds for the protection of persons injured by insolvent motorists. These funds would be built up by an extra tax on drivers' licenses. The unsatisfied judgment fund approach to the financial responsibility problem has been adopted in North Dakota and in several Canadian provinces.

Stronger

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PHILADELPHIA, Pa.....Kay Wheel Sales Company
PHILADELPHIA, Pa., Thomas Wheel & Rim Co., Inc.
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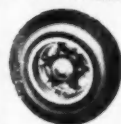
Engineering features of Dayton Fifth Wheels are typical of all products bearing the *Dayton* trade mark.

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Wage-Hour Law Provisions Have Many Fleet Exemptions

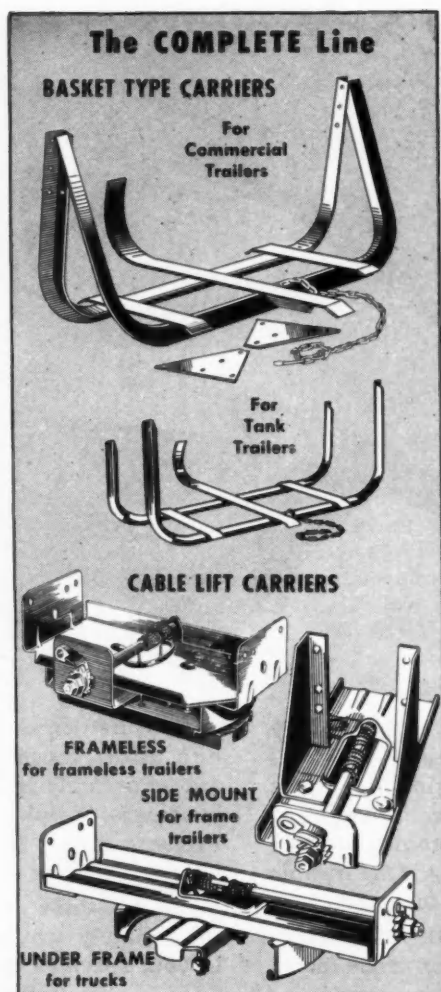
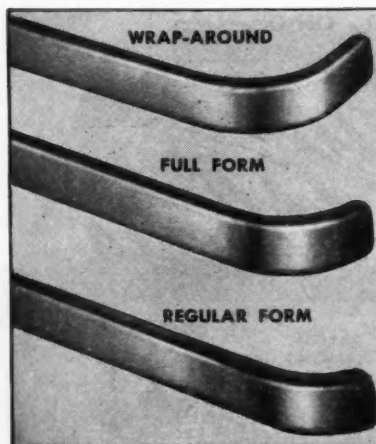
Thousands paid in back wages, however,
because operators did not know the law

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ARE employers in the highway transportation industry generally complying with the amended Fair Labor Standards Act? Does the record indicate that management has a firm grasp of the amendments that went into effect on Jan. 25, 1950?

Recently released statistics on the first full year of operation under the amended law shows that there is room for improvement. According to the 1951 annual report of the U. S. Labor Department's wage and hour, and public contracts divisions, 52 per cent of the establishments investigated in the highway transportation industry were found to have violated the act's minimum wage, overtime pay or child-labor provisions.

A statement made by William R. McComb, the division's administrator said: "The 1951 record makes it clear that greater efforts on the part of some members of the highway transportation industry would pay off in reduced liabilities for back wages owed employees. His report further shows that a total of \$231,866 in back wages was paid to 2349 employees, as a result of the divisions' activities. This sum does not include amounts awarded by courts to employees who exercised their statutory right to sue for back pay and liquidated damages.

"Although most employers know that the amendments raised the minimum wage to 75 cents an hour from 40 cents, the Divisions found that a sizeable minority of establishments—19 per cent of those investigated—had failed to observe this requirement when paying some of their employees.

"Even more extensive were overtime pay violations, found in 42 per cent of the investigated establishments. Employers should remember that the amended Act continues to require payment of at least time and one-half the employee's regular rate of pay for all hours worked in excess of 40 in the workweek, except where the Act specifically provides otherwise. What the amendments did was to define the regular rate to include all remuneration for employment except certain specified payments."

There Are Exemptions

DUE TO the nature of their operations, the locale of the industry, the service which the employer renders, some concerns were exempt from the minimum wage and overtime provisions of the act.

Forestry or lumber operations which employ not more than 12 persons are exempt. This is also true of those who operate daily newspapers, weekly, or (TURN TO PAGE 306, PLEASE)

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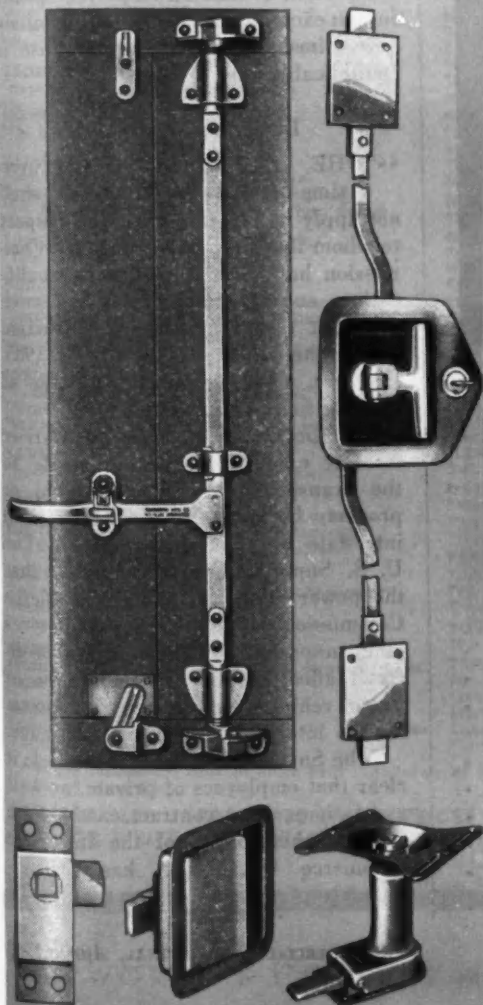
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Division of the Eastern Malleable Iron Co.

EVARTS AVENUE

CLEVELAND, OHIO

Wage-Hour Law

Continued from Page 304

semi-weekly papers with a circulation over 4000, the major portion of which is within the county where the paper is printed and published, including retail newspaper delivery.

Of particular note, is the provision in the rulings, which exempts, employees of street, suburban or interurban electric railways and local trolley or motor

bus carriers. The same is true of employees of taxicab companies. Workers on certain railroads, pipe lines and motor carriers, subject to the regulations of the Interstate Commerce Commission, are among others exempt from the overtime provisions of the act only.

To Define the Definitions . . .

IN answer to COMMERCIAL CAR JOURNAL's specific inquiries, William Hardagin, Jr., Philadelphia regional director of the Wage and Hour Division, added these comments:

"The word 'local' as used in Section 13(a) (9) modifies only the words 'trolley or motorbus.' The indispensable characteristic of a local motor bus carrier is that it is a carrier which serves an integrated commercial or industrial area for the purposes of carrying persons to and from their work in offices and factories, children to and from school daily, and other persons attending to necessary routine business. If a carrier does not meet this test, it is not exempt.

Those Partly Exempt

"THERE are certain establishments and individuals who engage in transportation which fall within the criteria for the exemption, and are likewise engaged in other activities not within the exemption. In such situations, the exemption is applicable to those employees who are exclusively engaged in the type of work which was intended to be exempt, that is, transportation by means described in the exemption or activities so closely related as to be actually a part thereof.

"Where a particular employee performs exempt and non-exempt work, and is engaged in work of a non-exempt nature for more than 20 per cent of the number of hours he works during a workweek, he would not be exempt for that workweek. In those cases where the portion of time an employee spends in non-exempt work cannot be definitely ascertained, the exemption likewise is inapplicable.

Interstate Carriers

"THE ACT provides that the overtime provisions of the law shall not apply to any employee with respect to whom the Interstate Commerce Commission has power to establish qualifications and maximum hours of service pursuant to the provisions of Section 204 of the Motor Carrier Act of 1935. However, the legal minimum wage of 75¢ per hour is applicable.

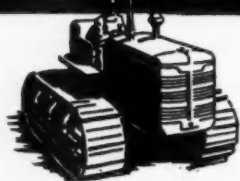
"The provisions of the Motor Carrier Act are expressly made applicable to the transportation of passengers or property by motor carrier engaged in interstate or foreign commerce." The U. S. Supreme Court has stated that the power of the Interstate Commerce Commission extends only to employees of a motor carrier whose activities directly affect the safety of operation of motor vehicles engaged in transportation in interstate or foreign commerce.

"The Supreme Court has also made it clear that employees of private, as well as of common or contract carriers are exempt whether or not the Interstate Commerce Commission has promul-

(TURN TO PAGE 310, PLEASE)

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Rothschild's Iron and Metal Works, Joplin
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*Smith Equipment Company, Great Falls
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*Highway Equipment and Supply Co., Lincoln
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Wage-Hour Law

Continued from Page 306

gated regulations with respect to such carriers. In short, then, the sole activities which may be regarded as exempt are those activities of employees of private, contract, or common motor carriers which directly affect the safety of operation of motor vehicles in interstate or foreign transportation.

"It should be noted that the Inter-

state Commerce Commission's jurisdiction over private carriers is limited to private carriers of property, but that its jurisdiction over common and contract carriers extends to both passengers and property.

Must Be Actual Carriers

"IN MAKING determinations as to the applicability of the Section 13(b) (1) exemption, a factor, which must not be overlooked, is that the exemption is available only to employees of motor carriers. Thus, for

example, mechanics employed by establishments engaged exclusively in repairing, servicing and leasing trucks, are not generally within the exemption because they are not employed by motor carriers within the meaning of the Motor Carrier Act.

"Whether employees of a truck renting establishment, such as those mechanics whose work directly affects the safety of operation of motor vehicles, are exempt, depends upon whether the lessor of the trucks has control and direction of the carrier services performed by the trucks services in which case the lessor would be a contract carrier. In the absence of proof of such control and direction, the employees of the establishment would not be exempt, since they could not be regarded as employees of motor carriers in interstate commerce.

Private Carriers

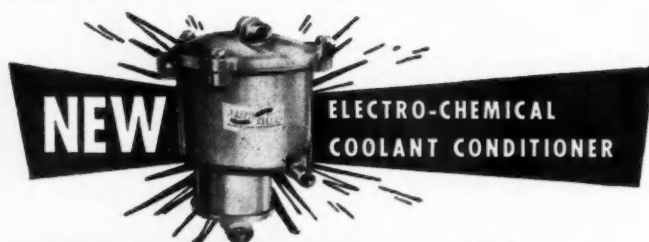
"THE EXEMPTION for private carriers extends only to the carriage of property.

"Section 203 (a) (17) of the Motor Carrier Act defines the term 'private carrier of property by motor vehicle' to mean any person not included in the terms 'common carrier by motor vehicle' or 'contract carrier by motor vehicle,' who or which transports in interstate or foreign commerce by motor vehicle property of which such person is the owner, lessee, or bailee, when such transportation is for the purpose of sale, lease, rent, or bailment, or in furtherance of any commercial enterprise."

How Old Are They?

FAILURE to comply with the Act's child-labor provisions was disclosed in 3 per cent of the investigated establishments. The child-labor requirements set a minimum age of 16 for most jobs with 18 as the minimum for occupations designated hazardous by the Secretary of Labor. Employment of boys and girls of 14 and 15 years of age is permitted in a few types of jobs—such as office and sales work—under strict restrictions on hours and working conditions.

The Administrator wants members of the industry to know that the violations found last year were not representative of the compliance record of all employers whose employees come within the provisions of the Act. The Divisions' policy is to make investigations where there is reason to believe that violations will probably be found. Moreover, experience demonstrates that the great majority of employers intend to comply with the Act; in most cases, failures are due to misunderstandings.

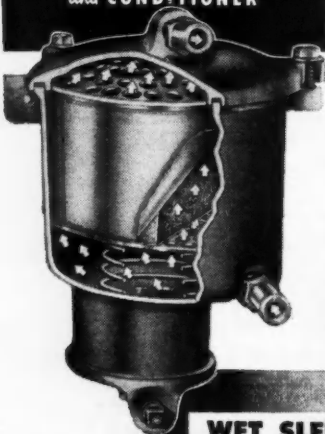


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The Perry Filter is economical to buy, easy to install on any gasoline or diesel-powered engine. For the first time, best known methods are combined to protect the entire cooling system against (1) rusting (2) pitting (3) hardness deposits (4) acid or alkaline conditions and (5) insoluble impurities in the coolant.

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(GM) Diesel,
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WET SLEEVE PITTING REDUCED 70%!



Cylinder sleeve from engine having Perry Filter protection since original purchase

From same type engine—72 weeks with conventional inhibitors (soluble oil) only

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**HELPS YOU KEEP
'EM ROLLING!**

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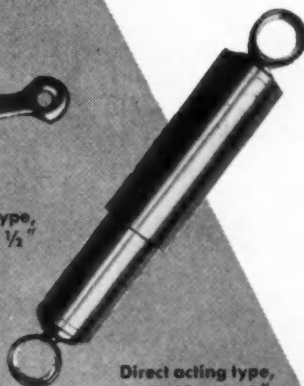


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1½", 1¾", 2",
and 2½" piston
diameters



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DELCO ASSURES YOU—

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**DELCO SHOCK ABSORBERS—
A UNITED MOTORS LINE**
Available Everywhere Through
UNITED MOTORS DISTRIBUTORS

DELCO PRODUCTS

Division of General Motors Corporation, Dayton, Ohio

The Delco line carries a national reputation for rugged dependability and long life—the built-in stamina needed to withstand roughest road conditions and toughest schedules. Fleet owners use Delco's complete line of shocks to keep 'em rolling, because they know Delcos are the finest heavy-duty shock absorber made—precision-built, quality-designed products that outperform all the rest. Follow the lead of wise fleet owners everywhere and choose the Delco line. You'll find the correct size and type of heavy-duty shock absorber for every vehicle in your fleet. The nationwide United Motors organization makes Delco replacements and parts readily available.

Motor Vehicles Vital To American Defense Economy

MODERN CIVILIZATION is geared to motor vehicles, to such a degree today that without them, the economies of many countries would collapse. Particularly is this true of the

United States which has over 70 per cent of the world's vehicles. In a few score years they have transformed America into the world's greatest nation of commerce, industry and agri-

culture. Even other forms of transportation—rail, water, pipeline, and air—have become dependent upon highway transportation.

And Trucks Lead Off

TRUCK transportation accounted for 137 billion ton-miles of intercity freight service during 1951; this is a nine per cent increase over the 1950 figure of 126 billion ton-miles. In both urban and intercity service, the nation's truckers hauled 75 per cent of the total freight of all carriers. As an employer, the truck industry ranks second only to agriculture in the number of persons employed.

Because trucks enable even the smallest cities to have almost the same variety of goods to offer as do the largest, the consumer can have delivered to his door practically anything that is made or grown in the world. About one-third of all purchases from a typical large department store are delivered by truck, as are almost 40 per cent of foods bought from the average independent grocer. Coal for heating more than 18 million dwellings is delivered by trucks.

Farmers own 2½ million trucks, and another ½ million trucks haul only farm products. Some 89 per cent of farm products and 65 per cent of the nation's livestock go to market by truck. The use of trucks serving agriculture has risen 60 per cent since 1941.

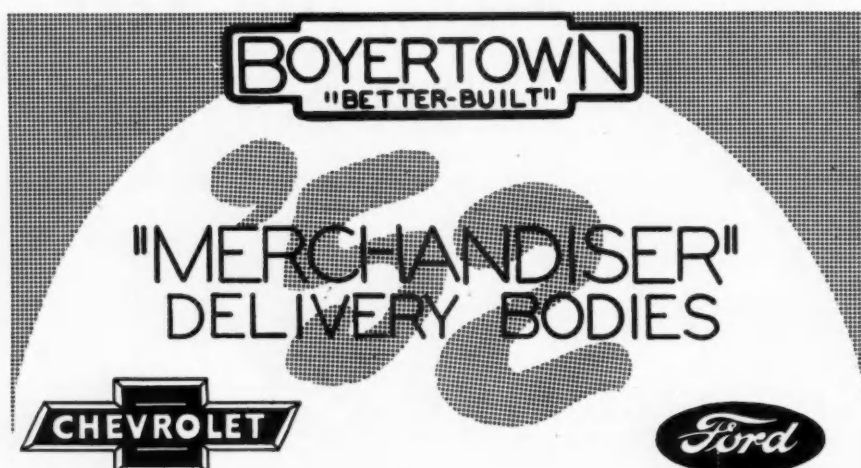
Railroads, airlines, and water carriers find highway transportation indispensable. Almost 100 per cent of all freight, mail, and express is carried to and from airports by motor vehicles. The Railway Express Agency (wholly owned by the railroads) operates 15,000 trucks, and 1400 trailers and semi-trailers.

Nearly half a million new vehicles were added to the nation's fleet last year to increase the total number by 5.6 per cent from 8,238,000 to 8,700,000 and in addition enough new equipment was bought to retire more than 600,000 old units.

Similar gains by the industry in 1952 are indicated if materials and equipment are available for production, according to the American Trucking Association.

Today's fleet of 8,700,000 units represents a tremendously important addition to the freight-carrying capacity of the nation's transportation system, a capacity far above that available even in World War II when the industry proved its indispensability with a fleet numbering less than 5 million units.

When we entered World War I the United States had less than 300,000 trucks, and transport bottlenecks developed quickly. However, there were 4,800,000 trucks in use in 1941 and in World War II, the nation's trucks did a most essential defense job. In addition to performing their regular peace—
(TURN TO PAGE 314, PLEASE)



NEW MODEL MC

IN THREE SIZES

"YOU CAN TELL IT'S FOR CHEVROLET"

New Chevrolet Grille with removable front. Full square usable load space—optional rear doors.

PLUS—THE IMPROVED MODELS, M-7 AND M-8 MERCHANDISERS



NEW MODEL MFB

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(WITH FORD STANDARD GRILLE)

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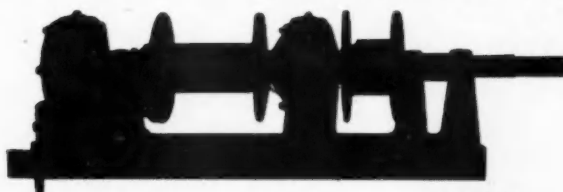
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April, 1952



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*with a TIME-**SAVING** Braden Winch...*



**BRADEN
DOUBLE DRUM MODEL
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In Florida, where palm tree transplanting is an every day job, Braden Winches do the hard work. Tall, awkwardly balanced palm trees are easily and quickly up-rooted loaded on trucks, and planted again when time-saving Braden Winches are used on the nurseryman's truck.

Whether you move trees, tanks, heavy oil equipment or machinery, there's a Braden Winch for the job. See your nearest Braden distributor today.

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Vehicles Are Vital

Continued from Page 312

time service, their shuttle service between decentralized war plants made them an indispensable part of the assembly line for the manufacture of arms and supplies. A transportation study conducted by the Michigan Highway Department during World War II revealed that 65 per cent of the incoming freight and 69 per cent of the outgoing freight of 741 war plants moved in motor trucks. They also speeded up production, and prevented plant and

ship tie-ups by expediting the transportation of emergency repair parts and supplies. They prevented a breakdown of land transportation service, such as occurred in World War I, by relieving traffic congestion in the terminal areas.

Although their potential capacity has been doubled since World War II, there is no surplus capacity in our trucking facilities. Going back to November, 1950, the Interstate Commerce Commission said, in its annual report: "Because of the international situation and the program of substantially enlarging our national defense facilities, the adequacy of motor-transportation

facilities as reflected in the last report has materially changed. Generally, motor carriers are now transporting quantities of traffic which almost absorb their capacity and in some areas the available facilities have been unable to move all traffic offered without some delays. Present indications are that as the defense program progresses, the amount of traffic which will require motor transportation will increase."

Meanwhile, demands for truck service have forced owners to keep vehicles in use beyond the normal retirement age. Average age of trucks is more than two years greater than before World War II, and approximately 1 million trucks are 14 years old or older. As mentioned earlier, the increase in the number of vehicles made during 1951 was less than six per cent over 1950.

The ability of trucks to perform under adverse conditions was well demonstrated last year during the floods in Kansas and Missouri. While other transportation facilities except automobiles and buses were disrupted for weeks, the trucking industry evacuated thousands of persons and their belongings, kept many communities supplied with food and other essentials, and still provided freight service to cities outside the flood zone.

A striking example of the part that trucks play in building America's war machines is found in the Cadillac Cleveland Tank Plant. Of the materials and parts provided by 2000 suppliers for the Walker Bulldog tank, 80 per cent arrive by truck. In the aircraft manufacturing field, trucks are practically indispensable. At the Glenn L. Martin Co., for example, trucks handle 75 per cent of all inbound tonnage and 60 per cent of the outbound shipping.

In any defense program, provision should be made for the production of a reserve of transportation facilities. An all-out war would place an added burden on truck transportation because of military movements and because of a reduction in the amount of goods that could be carried by coastwise and inter-coastal shipping. Although railroads are less vulnerable to enemy attack than ships, they are more susceptible to damage than trucks. Any reduction in other facilities would put an added burden on truck transportation which has proved itself to be absolutely indispensable in wartime as well as in peacetime.

The Bus Story

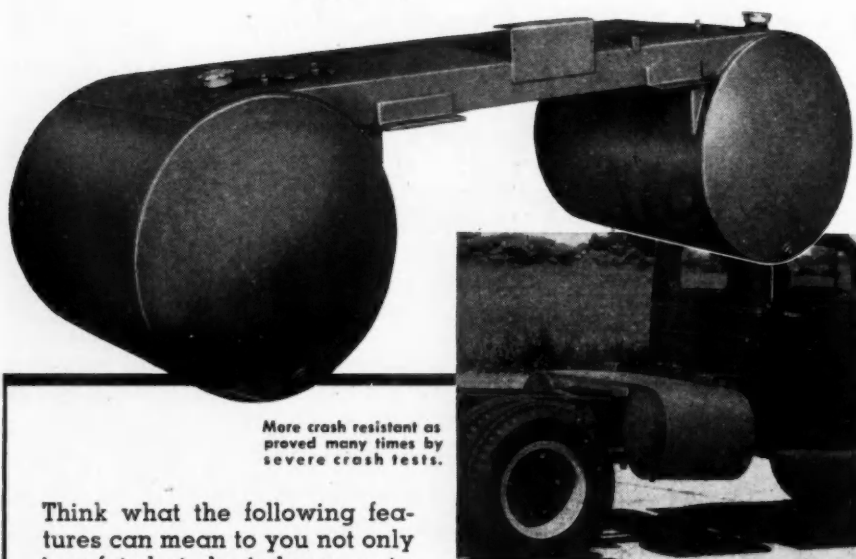
In starting, it might be well to define transit and intercity bus operation. Transit is the generally accepted designation for public transportation within an urban or metropolitan area. Intercity operators are those engaged pri-

(TURN TO PAGE 317, PLEASE)

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the truly safe **SADDLE TANK**
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More crash resistant as
proved many times by
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Think what the following features can mean to you not only in safety but also in lower costs:

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5. Furnished complete with diesel connections for cross-over line, gauge ports, and return line connection.
6. Also with spring and pad mountings for isolating the tank from excessive vibration.
7. Double checked for leaks with the famous G. E. Electronic Tester.
8. Available at prices competitive with the ordinary, old-fashioned saddle tank.

In addition to these features the "Cylsad" meets proposed specifications and tests recommended to I.C.C. governing the manufacture of automotive fuel tanks. May we send you complete information and prices?

THE LINTERN CORPORATION
BOX 428, PAINESVILLE, OHIO

Vehicles Are Vital

Continued from Page 314

marily in providing passenger transportation between communities separated by open country or between rural points along such routes between communities, as distinguished from local transit operations.

Growth of the intercity bus industry has been such that it now covers well over 400,000 route miles and serves every principal city and town in the United States, including thousands of communities which have no other form of transportation. With increasing decentralization of both defense and civilian industry, still more areas will be dependent upon this means of getting workers to and from their jobs.

During 1951, approximately 57,600 transit buses, traveling a total of 1.95 billion miles, carried a total of 9.24 billion passengers—which is more than half of the total passengers carried by the entire transit industry, including subway and elevated railways, trolley coaches, and surface railways. Back in 1940, a year of preparedness, transit buses carried over 4.2 billion riders. As industrial employment increased to meet the military demands during World War II, transit bus riding increased to over 10 billion riders in 1945. Thus, the necessities of war more than doubled the transit bus operators' part in transporting people to and from their jobs and other important assignments.

There are approximately 224,000 buses in the United States, about two thirds of which are privately owned and one third publicly owned.

Reasonable operating economy and dependability usually require replacement of motor buses after 10 years of service. According to recent estimates, more than 30 per cent of the motor buses in use have passed the normal retirement age, and, of course, it is much more expensive in manpower and materials to keep an old bus operating than a new one.

Although the number of transit passengers carried decreased during 1951, a reversal of this trend is now shown in many cities. With the full impact of the armament production program expected this year, an upswing in bus riding is foreseen. Surveys by the American Transit Association indicate a need for 6200 new buses for 1952. In 1951, 4500 new buses were added to the transit fleet; this was about a 70 per cent increase over 1950.

There has been a trend in the industry for years toward the substitution of buses on many routes served by street cars. With a continuation of this trend, more vehicles will be necessary for the establishment of new bus routes.

Output of a sufficient number of buses in 1952 will keep open the production lines for these vehicles. Other-

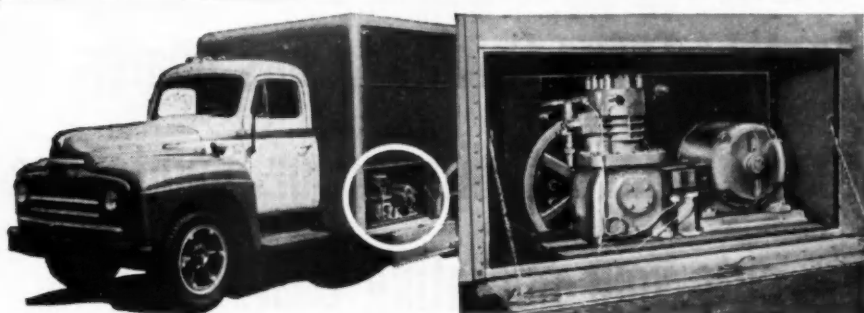
wise, conversion of these facilities to other work will make them unavailable if demands on the bus industry increase. In addition, supplies for the maintenance and repair of buses must be available in sufficient quantity to provide for their safe and efficient operation, and to prevent early deterioration.

From the time a bus is ordered, seven to eight months must elapse until it is built and delivered. For this reason, allocation of necessary materials for a period of only a month or two in advance would make bus manufacture extremely difficult and inefficient.

A highly essential public service at

all times, efficient bus transportation is an absolute necessity in the event of a war. Buses, like trucks, are less vulnerable to enemy attack than ships or railroads. Not being confined to definite routes as are the railroads, their movements are more difficult to anticipate, and they are free at all times to detour dangerous areas. Routing of about 95 per cent of all selectees by bus at the present time illustrates the important part that buses would play in the movement of troops in an all-out war. Military movements by bus increased 250 per cent in 1951 over 1950.

In a real emergency, manpower and
(TURN TO NEXT PAGE, PLEASE)



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Built to "pay-load" specifications and thoroughly proven by thousands of hours of use 'on-the-road' and under peak load conditions in every commercial use. Backed by a quarter-century of specialized experience and built by one of the finest engineering-manufacturing organizations in America. Proud product of the "LEHIGH TEAM."

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Vehicles Are Vital

Continued from Page 317

its most efficient utilization would be the principal problem of this country. The highest possible production cannot be attained simply by allocating the essential materials; the manpower must be available where and when required. During World War II, a substantial percentage of the nearly 4 billion passengers carried by intercity buses were workers going to and from their jobs in defense plants.

Because it has shown itself to be such an indispensable part of our national transportation system, the bus industry must have the consideration it deserves in the provision of all essential materials and manpower so that it can continue to serve the Nation in the future as it has in the past.

The Highway Situation

THE combined mileage of all roads and streets in the country is approximately 3,323,000 miles. Of these, 350,000 miles are main rural highway, 214,000 miles are secondary and farm-to-market roads, 2,373,000 miles are

county and township local rural roads, and 316,000 miles are city streets and highways. There are 70,000 miles of roads in Federal reservations. Outside of the cities, 86 per cent of travel is on 23 per cent of the road mileage; in cities 80 per cent is on only 12 per cent of the street mileage.

With an estimated total of almost 500 billion vehicle miles traveled during 1951, highways are not adequate to meet the increasing demands being made upon them at many points. During World War II the construction of new roads and repairs to existing ones was discontinued because the necessary materials and manpower were not available. Since that time new construction and modernization have lagged behind requirements, and this condition will no doubt become worse with the rising demands of our defense program and increasing traffic.

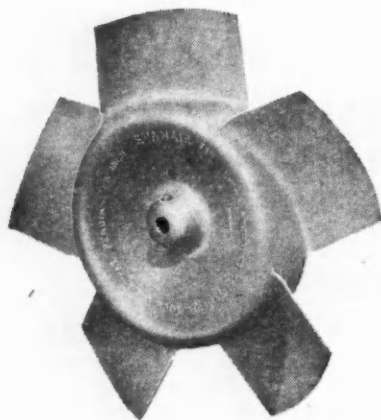
Maintaining a highway system is not a thing to be turned off or on like a water faucet, according to Arthur M. Hill, president of the National Association of Motor Bus Operators. When it has been stopped the essential manpower disappears. Plans and specifications must be changed and contracts extended, renegotiated or revoked. Resumption of effort is always accompanied by a dangerous time lag.

While some campaigns in history may have succeeded without it, no major war was ever won without a strong civilian economy to support the military operations. Our civilian economy is geared to and dependent upon our system of transportation, in which highway transport has come to play a dominant part.

From the moment an all-out war materializes, the probability of securing needed materials and manpower for roads will vanish. If we are to have a strong supporting economy and an adequate highway transportation sys-

(TURN TO PAGE 320, PLEASE)

Another Evans truck and bus heater feature that simplifies your maintenance ... cuts your operating costs



The indestructible
Evanair fan that will
not get out of shape ...
will not get out of
balance ... gives you
exceptional heater
performance

Evans engineering solves one of your maintenance problems:

Ordinary tin fans get out of shape and out of balance and require many replacements. Evanair die cast fans take punishment that no other fans withstand. In addition, they are:

Light—less than half the weight of ordinary fans—giving less bearing load and longer motor life.

Balanced—accurately die cast for precision static and dynamic balance.

Rugged—no chipping, cracking or bending under rough handling.

Quiet—smooth surfaces and airfoil blades provide quiet operation.

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One piece—no parts to work loose.

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Thousands of Evanair fans are in dependable daily service. Evans Products Company, Heating & Ventilating Division, Dept. Q-24, Plymouth, Michigan.

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EVANS CUSTOM HEATING AND VENTILATING
FOR A WORKING WORLD ON WHEELS



REVENUE VEHICLE MILES OPERATED BY URBAN BUSES 1936-1952

Year	Millions of Miles
1936	864.2
1937	957.0
1938	986.4
1939	1,047.4
1940	1,194.5
1941	1,313.0
1942	1,612.0
1943	1,693.0
1944	1,713.3
1945	1,722.3
1946	1,807.2
1947	1,885.7
1948	1,975.7
1949	1,968.2
1950	1,895.4
*1951	1,952.2
*1952	2,030.7

*Preliminary estimate.

Source of Data: 1936 to 1950 inclusive from American Transit Association; remaining figures, ATA estimates.



Maintenance Costs Cut... because Engines Run Cleaner on **CITIES SERVICE C-800 OIL**

"GRATIFYING CLEAN CONDITIONS" replaced the usual "evils" of stop-and-go engine operation, writes still another major fleet owner who switched to Cities Service C-800 oils. "In addition, the cylinder and shaft diameters have shown a minimum of wear."

This operator tested—checked—compared—for two years before he wrote his praise. It's added evidence that these oils can give you more work OUT of your trucks and less work ON them. With these Heavy Duty Cities Service C-800 oils... plus our technical help on your special problems... you can switch to lower costs. Write for full details to CITIES SERVICE OIL COMPANY, Dept. D2, Sixty Wall Tower, New York City 5. Or call the Cities Service office nearest you.

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April, 1952

For Increased Traction with Trailing Axles...



the **HENDRICKSON**
Airlift

**Permits fast, positive load transfer from
Trailing Axle to Driving Axle**

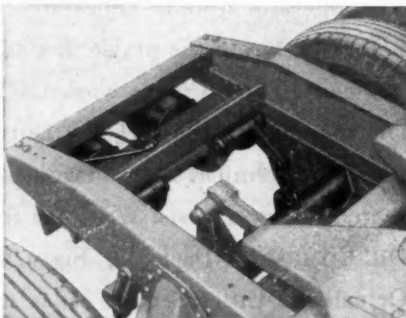
The Hendrickson Airlift gives you additional traction, when you need it, by providing a quick means of transferring load from the trailing axle to the driving axle. After traction is obtained and the vehicle is underway the load can be returned to the trailing axle for normal load distribution. The Airlift, which eliminates the traction problems in trailing axle equipment, adds just enough additional load to compensate for ice on the highway at stop lights, etc. The flexibility of the Hendrickson Tandem makes it extremely adaptable to the Airlift.

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COMPLETE DETAILS**

HENDRICKSON MOTOR TRUCK COMPANY

8001 West 47th Street • Lyons (Chicago Suburb) Illinois

320



The simple mechanism consists of two large air rotachambers operating through a bell crank to a chain lift welded to the trailing axle.

Vehicles Are Vital

Continued from Page 318.

tem, the road-net must be brought up to reasonable standards before the blow falls. Roads and bridges cannot be built overnight.

As for the immediate problem, we can be eternally grateful for this period of preparation before being plunged into an all-out war. Should such a war develop, it is difficult to conceive the magnitude of the burden our roads will be required to bear. Unless they are in far better condition than now, they will fail when the chips are down. It will then be too late.

We can ill afford to jeopardize our national security in another world war with our road system in its present condition. Nor should our economy be subjected to the increasing waste of existing facilities and the loss of vehicle and man-hours caused by traffic congestion and delays.

TRANSIT BUS REPLACEMENT PARTS REQUIREMENTS FOR 1952

Part	Dollar Value*
Axles, front	\$ 919,539
Axles, rear	2,477,426
Body, chassis and frame	4,256,690
Brake system	5,368,408
Clutch	2,399,510
Cooling system	1,838,840
Electrical equipment	
a. Low voltage & ignition (Exc. batteries)	3,218,744
b. Propulsion motor and generator comp.	(a) 90,506
c. Propulsion motor controls	(a) 17,926
d. Batteries	1,763,903
Engine	12,004,592
Frame springs & mountings	2,378,894
Fuel and exhaust system	1,513,024
Steering	540,214
Tires & Tubes	16,133,072
Transmission	6,235,178
Propeller shafts	650,637
Wheels, hubs and bearings (Except tires)	1,285,789
Special equipment	1,668,346
Total replacement parts	\$64,761,318

*All dollar values are based on 1950 unit costs.
(a) Electric drive motor buses.
Source: American Transit Association estimates.



"Drain out some gas."

COMMERCIAL CAR JOURNAL, April, 1953

Fiske Brothers Refining Co., Lubriplate Div. • Lubriplate Lubricates in Tubes
 Freedom-Valvoline Oil Co. • Valvoline Motor Oil
 Gulf Oil Corp. • Gulfpride Motor Oil; Gulf No-Nox Gasoline
 Kendall Refining Co. • Kendall—The 2000 Mile Oil
 Lubaid Co. • Lubaid
 MacMillin Petroleum Corp. • Institutional Advertising
 Pennsylvania Grade Crude Oil Assoc. • Institutional Advertising
 Pennzoil Company, The • Pennzoil Motor Oil
 Pyroil Company, The • Pyroil
 Quaker State Oil Refining Corp. • Quaker State Motor Oil
 Shaler Company, The • Rislone
 Shell Oil Co. • Shell Motor Oil; Shell Research
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 Bowes "Seal Fast" Corp. • Bowes Stop-Leak, Rust-Rout
 Boyle-Midway, Inc., Sub. of American Home Products • 3-in-1 Oil
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 Busch & Company, Inc., A. G. • Busch Auto Lights
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 Casco Products Corp. • Casco Spotlights, Lights
 Champion Laboratories, Inc. • Champ Oil Filters
 Champion Spark Plug Co. • Champion Spark Plugs
 Chrysler Motors Parts Corp. • MoPar Parts
 Coffing Hoist Co. • Coffing Hoists
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 Commercial Solvents Corp. • Nor'way Anti-Freeze
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 Filterzone Auto-Vision Co. • Filterzone Sun Visors
 Firestone Tire & Rubber Co., The • Firestone Batteries; Brake Linings; Accessories
 Fram Corporation • Fram Oil, Fuel, Air, & Water Filters
 Freeman & Freeman, Inc. • Porcelainize
 Fulton Company, The • Fulton Sun Shields
 Gale Hall Engineering Co. • Mile-O-Meters
 General Electric Co. • Calrod Engine Heaters; Headlamps
 Gould-National Batteries, Inc. • National Batteries, Kathanode Batteries
 Goodyear Tire & Rubber Co., The • Airfoam; Goodyear Batteries
 Grey-Rock Div. of Raybestos-Manhattan, Inc. • Grey-Rock Brake Linings
 Grizzly Mfg. Co. • Grizzly Brake Linings
 Guide Lamp Div., General Motors Corp. • Guide Spotlamps; Rearview Mirrors
 Hastings Mfg. Co. • Hastings Piston Rings
 Heckethorn Mfg. & Supply Co. • Columbus Shock Absorbers
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 Herbrand Div. of Bingham-Herbrand Corp. • Herbrand's Tools; Piston Rings
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 Hull Mfg. Co. • Hull Auto Compasses
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 Nicholson File Co. • Nicholson Files
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 Upson Brothers, Inc. • Hold-E-Zee Screw Drivers
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 Yankee Metal Products Corp. • Yankee Back-up Lights
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 Zink Corp., The Howard • Howard Zink Seat Covers

NOTE: The automotive manufacturers above were in the Post between March 1, 1951, and March 1, 1952.



The Saturday Evening
POST

-gets to the heart of America

Defense Program Has Adverse Effect On Employment in Automotive Industry

Materials shortages, decreased civilian manufacture blamed for a tense labor situation which may be self-eliminating

What's the best way to repair a cracked water jacket?*

You will find complete, step-by-step instructions on new ways to make this and other crack repairs in the new Tincher CRACK REPAIR Manual. Fully illustrated by drawings like the ones shown here in reduced size, this big manual covers such subjects as "Types of Cracks and Their Causes" . . . "Why Repair Cracks?" . . . and "How to Analyze The Problem." It tells, too, how the Tincher Electro-Mechanical Process can save you time and bring you unusually attractive profits.

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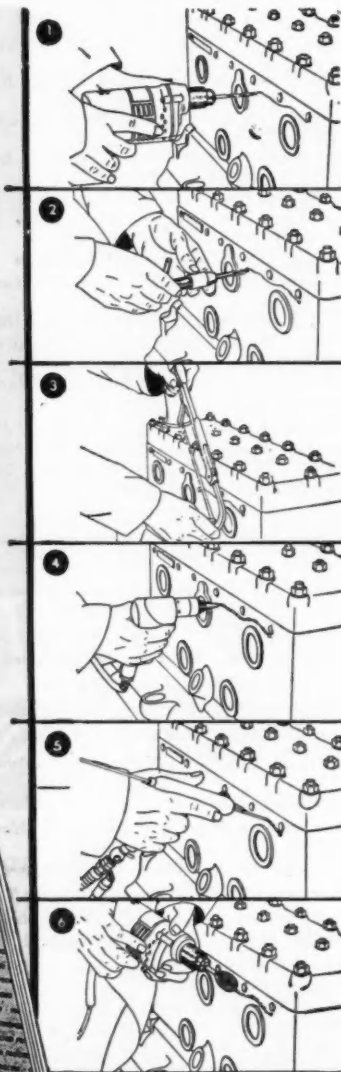
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*90% of all common cracks in engine
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Manual, FREE!

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INDUSTRIAL mobilization has already had a substantial impact on the automobile industry, the Nation's largest user of metals. Allocations of scarce metals have forced a sharp cut-back on the civilian production in the industry. At the same time, because of its great amount of metalworking facilities and experience, the automobile industry has been given substantial contracts to produce military equipment.

The cut-backs resulting from scarce metal allocations and partial defense conversion of the industry, have significant manpower implications because of the automobile industry's outstanding importance as an employer of metalworkers.

Employment Decreases Sharply

THUS far, employment in the industry has fallen from its postwar peak of 936,000 wage and salary workers in March, 1951, to a preliminary estimate of 791,800 in November, a drop of about 144,000. Output of passenger cars declined from 1.6 million units in the first quarter to less than 1.2 million units in the third quarter of 1951.

Further cutbacks are planned in order to divert a larger share of the Nation's supplies of basic materials to the production of military equipment. Therefore, fewer workers will be needed to produce the limited number of both automobiles and trucks scheduled for production in 1952 under the Controlled Materials Plan.

Same for Civilian Production

A DROP in the production of passenger cars is expected between the fourth quarter of 1951 (1.1 million units) and the first quarter of 1952. Authorized production is limited to 1,006,000 passenger cars, but materials for building only 930,000 units have been allocated to the industry.

Shortages of copper and aluminum, however, may limit production in the first quarter to an estimated total of about 950,000 passenger cars. Total scheduled output of trucks is also lower for the first quarter of 1952, although truck purchases by the military services will increase. Based on this anticipated output, it is estimated that between November 1951 and the end of the first quarter 1952, employment on civilian automotive products will decline by about 60,000 wage and salary workers.

Further reduction in allotments of critical materials for automobile production in the second quarter were announced by Defense Production Administrator Manly Fleischmann on January 9 before a Joint Congressional Committee. (TURN TO PAGE 326, PLEASE)

safety, economy,
and
driver protection with

Tachograph

THE TIME-TESTED RECORDING SPEEDOMETER

Seattle Post-Intelligencer

'Tachographs' Win 3 Speeding Acquittals

The silent testimony of "tachographs" freed three men from speeding charges Wednesday.

A jury in Superior Judge Ward W. Roney's court acquitted Frank M. Thomas of 13224 2d Ave. S. W.; Desmond Watson of Yakima and George M. Anderson of Duvall. They had appealed from convictions in justice court at North Bend of speeding 50 miles an hour February 25.

A state patrolman and a highway department man both testified to that speed. But Defense Counsel Albert E. Stephan introduced the charts from the "tachographs" on each of the trucks the men were driving for Inland Petroleum Transportation Company. The charts showed 40 miles an hour at the place of the arrests.

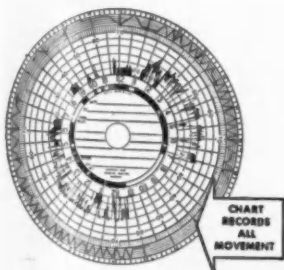
The defense admitted the speed-recording devices can be tampered with, as claimed by the state, but said any tampering would speedily show up in the truck's operations. For example, a known number of miles covered within a certain time would show the speed if the device itself did not. The company has \$5,000 worth of them.

The two press clippings reproduced here, tell how Tachograph charts, introduced as evidence, helped in absolving innocent drivers of false speeding accusations. The Tachograph charts are inserted and locked in the instruments at the start of each run. These charts are marked by automatically controlled styluses which make an accurate record of all movements of the vehicle.



CHART TELLS ALL

- WHEN ENGINE STARTED
- HOW LONG ENGINE IDLED
- WHEN VEHICLE WAS IN MOTION
- HOW FAST IT TRAVELED
- WHEN VEHICLE STOPPED
- DISTANCE TRAVELED BETWEEN STOPS



DISTRIBUTED BY
Wagner
Electric Corporation

The Tachograph, a scientifically-designed, accurate recording speedometer, builds driver confidence—it helps good drivers become better drivers—encourages safer driving and gives a true graphic record of the entire trip of a vehicle. It furnishes a report far more accurate and complete than a supervisor accompanying the driver could give.

TRENTON EVENING TIMES

Truck Firm Proves to Court Its Driver Wasn't Speeding

Judge Wipes Out \$5 Fine When Apparatus Which Registers Van's Speed Shows Operator Didn't Exceed 40 Miles An Hour

A Baltimore trucking firm, jealous of its record in New Jersey went to great trouble and expense in Mercer Court on Friday to have a \$5 speeding fine against one of its drivers stricken from the records.

Judge Charles P. Hutchinson reversed the findings of Magistrate William Glackin of Washington Township after being convinced that Henry M. Heline had not driven his truck faster than 40 miles an hour back on November 3 when he was arrested.

Motor Vehicle Inspector William Manley had maintained that Heline was traveling 55 miles an hour just before he was stopped. In seeking to reverse the lower court's findings, Martin Devlin, counsel for the Davidson Transfer & Storage Company, produced in court the Tachograph record taken from the cab of Heline's truck. This showed that from the time Heline entered New Jersey until he was stopped, his speed did not exceed 40 miles an hour.

Judge Hutchinson displayed great interest in the Tachograph. This is a device that records on a locked disc the speed of the vehicle, the miles traveled and the number of times it stops. An expert from the manufacturer in Illinois was produced as a witness to explain how the device works. Another expert from Baltimore was used to interpret the red and blue markings on the disc and to testify to the speed of Heline's truck. Further evidence was introduced to show that the Tachograph was accurate and that it had not been altered after the driver's arrest.

MAIL COUPON TODAY
FOR FULL INFORMATION

Wagner Electric Corporation
6476 PLYMOUTH AVE., ST. LOUIS 14, MO.
Please send a copy of Bulletin SU-3B.

Name and Position _____
Company _____
Address _____
City _____ State _____
We operate _____ Vehicles
(NUMBER)

SS2-6

COMMERCIAL CAR JOURNAL, April, 1952

325

Effect on Employment

Continued from Page 324

mittee on Defense Production. He stated that enough steel to produce about 900,000 passenger cars will be allotted, but that only enough copper and aluminum to build about 800,000 cars can be allocated in the second quarter.

Maximum authorized production in the second quarter is 930,000 units. The number of cars which will actually be

produced out of these materials depends upon the industry's resourcefulness in stretching its allocations of scarce metals as well as upon its available inventories. The maximum authorized production level of 930,000 passenger cars in the second quarter is about 7 per cent less than the first quarter's authorized maximum of 1,006,000 units.

If production reaches the maximum allowable rate, a small decline in employment will occur during the second quarter. In order to illustrate the effect on employment of a drop in production

to the limits set by the copper and aluminum allocations, an assumption has been made that production in the second quarter would not exceed 800,000 passenger cars and 225,000 trucks (including motor vehicles produced for military use), and that there will be no further change in the output of replacement parts. The effect of this output in the second quarter would be to further reduced employment on civilian type automotive products by about 70,000 wage and salary workers from first quarter levels.

Defense Orders Will Increase

EMPLOYMENT on defense production by automobile companies, however, will be increasing at the same time that civilian output declines. Dollar volume of military contracts held by the automobile industry rose rapidly after the Korean fighting started in mid-1950. Some motor-vehicle plants were already producing parts for jet aircraft, tanks, guns, and ammunition. Although the number of automobile workers engaged in defense activities was relatively small in late 1951, output of such products by automotive companies was growing.

Based on production plans of major automotive companies in the early fall of 1951, it is estimated that between November, 1951, and the end of the second quarter 1952 about 75,000 wage and salary workers, in addition to those already engaged in defense activities in November, 1951, will be employed in producing military products in automobile company plants. A large number of these workers will be employed in entirely new plants or in reconditioned World War II plants.

(TURN TO PAGE 328, PLEASE)

Taft Visits Highway



Employees of the Highway Trailer Co., Edgerton, Wis., greeted Robert A. Taft, Senator from Ohio, when he visited the offices and plant recently. After the tour, Senator Taft posed with (left to right) L. E. Craig, vice president and general sales manager, H. L. Charlton, president, and on the Senator's left, F. C. Gokey, executive vice president.

James K. Knudson, approves
DEFENSE TRANSPORT ADMINISTRATOR

Motor Life Extension Institute

Sponsored by **KEM**

DISPLAY THIS CERTIFICATE

ADMINISTRATOR KNUDSON approves Institute in principle and urges Preventive Maintenance Program to Strengthen Transport: "It is vital that carriers place renewed emphasis on preventive maintenance, minimizing the time that trucks are out of service for repairs. . . . Transportation never will be a vulnerable spot for America so long as you continue improving, expanding and strengthening the transportation system of your country."

The Institute aims to extend the service life of autos, to provide Independent Mechanics with more business by educating them in preventive maintenance; to improve training; and promote greater profit for Jobbers and Dealers.

WRITE FOR THIS "PACKAGE" TODAY!

MEMBERSHIP CERTIFICATE
with the Seal of the Institute in high color. It will show the Motorist that you are interested in keeping his car rolling.

KEM TUNE-UP DIGEST
published by Motor Life Extension Institute (1941-'51 specs). Follows up-to-date tune-up procedure, helps mechanics diagnose engine troubles. Send 25c for copy of Digest and Institute Membership Certificate.

DEMONSTRATION CLINICS—FREE
in key areas of U.S.A. to train Independent Mechanics to properly replace, repair and rebuild automotive parts.

A few KEM LIFE EXTENSION REPLACEMENTS

- Fuel Pumps & Parts
- Prefitted Ignition Parts
- Lifetime Micro-Bronze Filters
- Lifetime Binalon Diaphragm

MOTOR LIFE EXTENSION INSTITUTE c/o **KEM**



**"Do I need Special belts
for my fleet?"**



"How can I cut belt and hose costs?"



**"Why do some belts
outwear others 3 to 1?"**

Meet the man with the **ANSWERS!**

The Dayton Fleet Engineer has the answer to almost any belt or hose problem. And if he *doesn't* have the answer at the tip of his tongue, he (and the Dayton engineering staff) will soon find it.

He'll be glad to make a survey of your fleet's belt and hose requirements. He'll make sure your units have the *right* belts and hose . . . that they're installed properly . . . and will check to



see if *special* belts should be engineered to meet your particular operating conditions. There's no obligation, of course. Just ask to have him call on you.

FREE! BELT MAINTENANCE MANUAL

Send for free Fan Belt Maintenance Manual A861, with tips on how to get the longest life and best performance out of any automotive belt. For your free copies, write:

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WORLD'S LARGEST MANUFACTURER OF V-BELTS

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COMMERCIAL CAR JOURNAL, April, 1952

Effect on Employment

Continued from Page 326

So the Outlook Isn't Bad

THE drop of nearly 17 per cent in production-worker employment between March and November, 1951, reflects the declining production of automobile and trucks. Some further decreases in employment were expected during the first part of 1952, owing to scheduled declines in both automobile and truck

production. During the first half of 1952, production of civilian automotive products will probably reach the low point in the current mobilization program.

Defense Production Administrator Manly Fleischmann has announced the Government's intention to maintain output at an annual rate of at least 4 million passenger cars. Truck production during the coming months will depend partly upon sales to the military and partly upon the availability of materials for civilian trucks. Materials for building about 240,000 trucks have been

allocated by the National Production Authority for the first quarter of 1952. Production of 275,000 trucks has been authorized if the industry can stretch its supplies of metal, including inventories, to produce them.

The level of production of replacement parts is another factor in determining the employment outlook for the automobile industry. Sales of replacement parts, which during 1950 represented about a sixth of the wholesale value of the automobile industry's output, increased slightly in 1951, and are expected to remain near its present levels during the first half of 1952.

No further declines in employment on civilian automotive production are anticipated after mid-1952. In fact, a slight increase may occur in the second half of the year. This expectation is based on the assumption that production of passenger cars will total at least 2 million units during the last half of the year, and that purchases of civilian-type trucks for military use will rise.

Report On Winter Driving

The 1952 test project of the National Safety Council's Committee on winter driving hazards, conducted at Pine Lake and Shawano Lake, near Clintonville, Wis., has been completed insofar as weather conditions permitted.

Test vehicles this year consisted of four powered units including a 4 x 2 tractor, a 4 x 4 tractor, a 6 x 4 tractor, and a 6 x 4 straight truck; these were used in combination with a single axle semi-trailer, two tandem axle semi-trailers, and a two-axle full trailer. Vehicles were furnished by International Harvester Co., Four Wheel Drive Auto Co., Dodge Truck Division, Diamond T Motor Car Co., and Highway Trailer Co.

The tests were carried out in three separate phases consisting of (1) basic stability tests, (2) stopping and steering control tests, and (3) driver technique studies.

The basic stability tests consisted of measuring the magnitude and direction of the forces at the kingpin of a tractor semi-trailer combination and the angularity of the combination under different combinations of braking. In these tests an unstable condition was produced either through the application of centrifugal force, wind, or differential friction.

Stopping and steering control tests, in which an attempt was made to simulate a highway condition requiring simultaneous braking and steering, consisted of braking to a stop within a 12-ft lane, and also swerving out of the lane while braking in order to avoid an obstacle. Stopping ability and steering ability were thus measured.



16-PAGE MANUAL OF NEW KENT-MOORE SPECIAL SERVICE TOOLS FOR HEAVY-DUTY AXLE AND TRANSMISSION REPAIR WORK!

Here it is! A brand new Manual describing a brand new group of time-saving, money-saving Kent-Moore Special Service Tools. Essential tools developed in cooperation with leading manufacturer of trucks and coaches to perform specific repair operations for which no adequate standard tools exist! Engineered to improve service, eliminate parts damage! Applications cover all vehicles equipped with Timken-Detroit Axles, Eaton Axles, and Spicer Brown-Lipe Transmissions. It's FREE . . . yours for the asking without obligation! Send for your copy today!

Kent-Moore Organization, Inc.

Engineers and Manufacturers of Special Service Tools and Equipment
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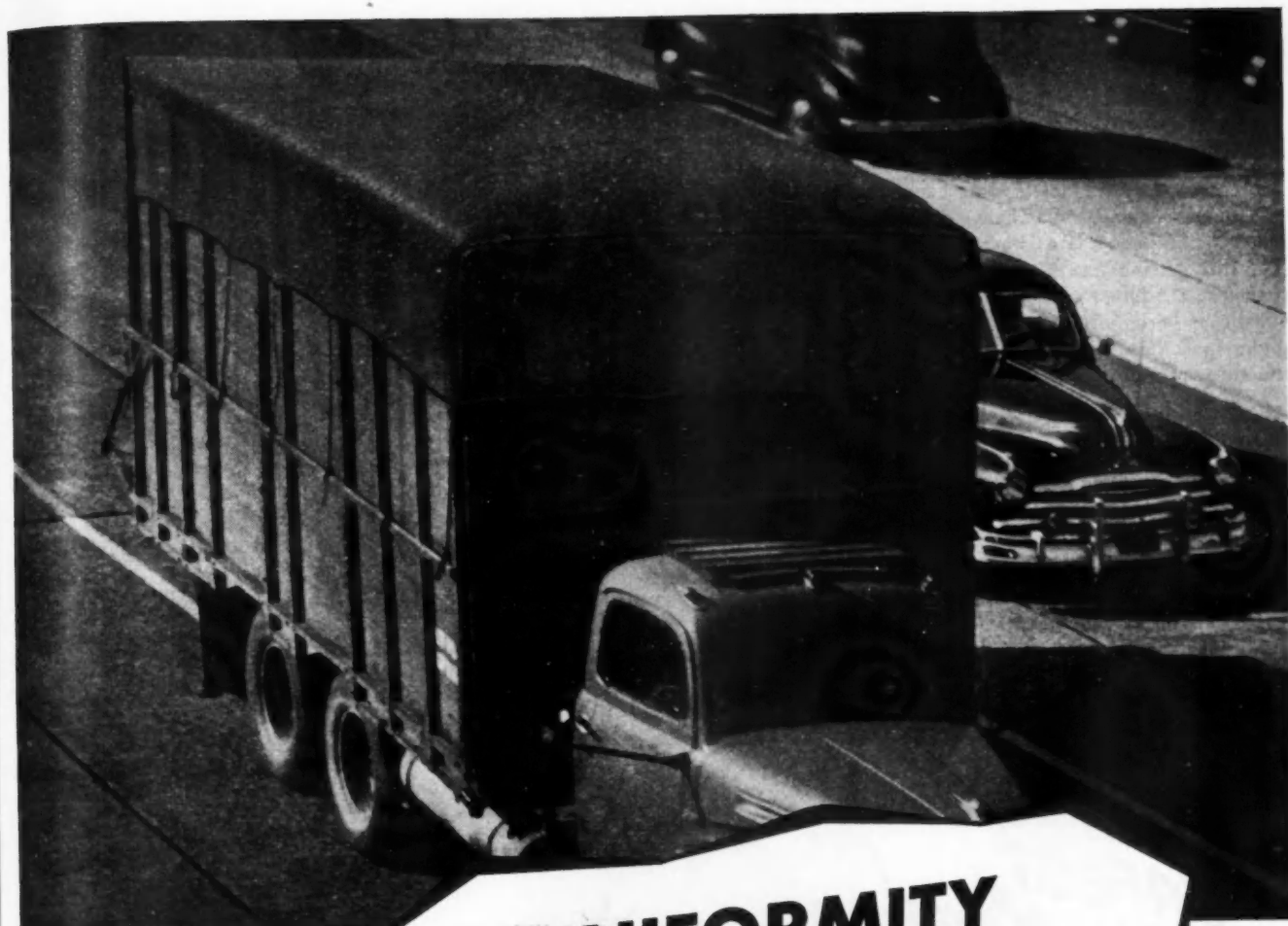
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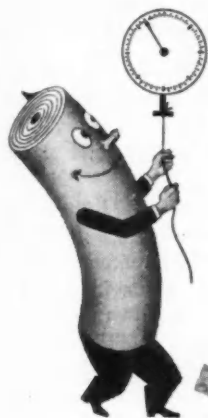
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April, 1952



UNIFORMITY Makes the Big Difference In TRUCK COVER Fabrics



MT. VERNON EXTRA Gives You Greater Fabric Uniformity

Determining yarn
tensile strength
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One of a series of comprehensive
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News Reports

Continued from Page 212

Nickel Supply Very Short

Nickel is still the outstanding exception to the general improvement in the materials outlook. NPA is advising any one still getting any nickel for other than direct military use to plan now to substitute boron or other alloys. It is understood that at least one truck manufacturer reports very favorable results

from an extensive test, including field use by operators, of Boron steel in leaf springs. It's something to think about if the government forecast of no nickel for civilian products next year becomes a reality.

Industrial Council Elects

Ray L. Morrison, executive vice president of the DeVilbiss Co., has been elected president of the Northwestern Ohio Industrial Council. He succeeds Jules D. Lippmann, president of the

Textileather Corp., who was the Council's first president.

Elected vice president of the Council was Joseph L. Tillman, president of the Unitcast Corp. William H. Schomburg, president and treasurer of the Superior Spinning and Stamping Co., was named Council secretary-treasurer.

The Council was organized in 1950 to provide a fact finding and evaluating organization for the diversified industries of the Toledo area.

Sells Reos in Providence

Extending a policy launched last September on a restricted basis, The Auto Co., Ardmore, Pa., will sell and service Reo trucks, tractors and buses as well as Autocars throughout the company's Providence district. The agreement was originally put into effect at Autocar's Jersey City, Paterson and Newark branches, all in northern New Jersey.

Chemical Executives Organize

A number of automotive chemical manufacturers have formed a new association, the Automotive Maintenance Chemical Industries. Frank M. Speaker is the executive manager of the new AMCI, with headquarters at 412 Fifth Street, Northwest, Washington 1, D. C.

Production Rights Given

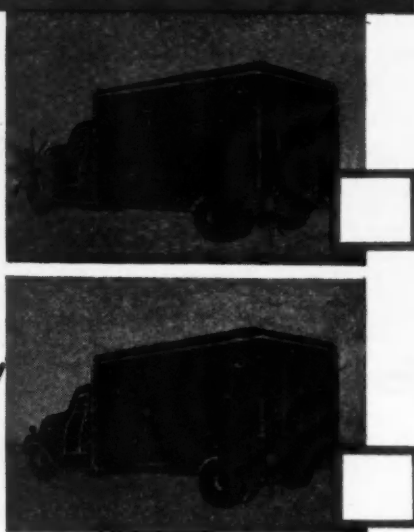
United States Rubber Co. has announced it has licensed four major manufacturers of vinyl coated fabrics to manufacture and sell its vinyl plastic upholstery.

The four manufacturers licensed to make the new material are Masland Duralather Co., Philadelphia, Pa.; Federal Leather Co., Belleville, N. J.; Landers Corp. and Textileather Corp., both of Toledo, Ohio.

(TURN TO PAGE 332, PLEASE)

LOOK alongside
these two trucks

Put an X opposite the
truck that has the
SAFEST
front signal lamps!



Sure!... you chose the truck equipped with Double Face lamps — because Double Face lamps give Dual Protection. They signal to the side of the vehicle as well as forward. This means that even when a vehicle has passed the rear of your truck the driver can still see your front Double Face Signal Lamp flashing.

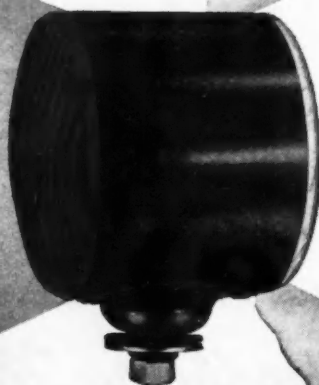
and ... Signal-Stat Double Face signal lamps cost only a few pennies over Single face units. And you have a lot more **SAFETY**.

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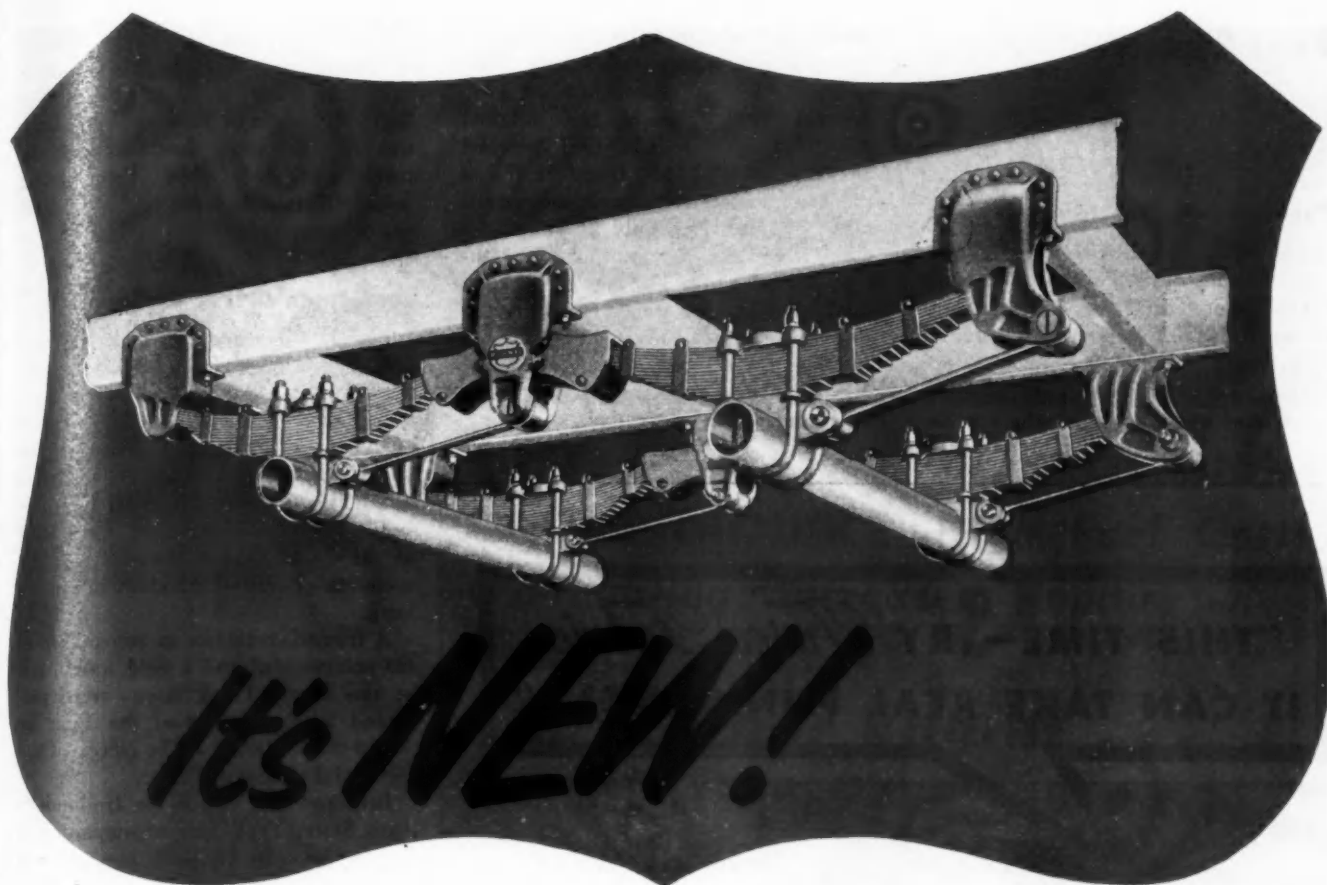
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The HIGHWAY *Progressive* TANDEM

light . . . strong . . . efficient . . . simple . . . economical

Highway, one of America's pioneer trailer manufacturers, proudly announces a sensational new running gear—the Highway Progressive Tandem.

All of Highway's engineering genius, manufacturing know-how and knowledge of trailer transportation problems have been centered for the past two years on the development of this revolutionary tandem undercarriage.

Its *advanced design* and astonishing *road-proved performance* are the result of over thirty-five years' experience building fine trailers for the nation's leading operators.

With a full understanding of the problems involved due to varying load conditions, this new tandem's PROGRESSIVE SPRING SUSPENSION provides spring action exactly suited to all load variations.

From a thorough study of all road conditions, Highway engineers have perfected the SUPER-SENSITIVE EQUALIZER which permits the Highway Progressive Tandem to respond instantly to every road irregularity.

The SUPERLATIVE STRENGTH, UTMOST SIMPLICITY and MINIMUM MAINTENANCE requirements of the new Highway Progressive Tandem assure you of thousands of miles of money-making trailer operation.

Ask your friendly Highway Distributor or Factory Branch to give you the whole story of the new Highway Progressive Tandem . . . TODAY. You will be glad you did!

note these points of HIGHWAY PROGRESSIVE TANDEM SUPERIORITY

1. PROGRESSIVE SPRING SUSPENSION assures action suited to varying load conditions.
2. CURVED END SPRINGS. Upper leaves curved. "Roll" on spring hangers as springs flex—no gouging.
3. SUPER-SENSITIVE EQUALIZER. Wheels instantly respond to all road irregularities.
4. MINIMUM LUBRICATION. Just two lubrication points requiring only occasional attention.
5. SUPER-OILITE BRONZE BUSHINGS. Oil impregnated, and shock-absorbing RUBBER BUSHINGS needing no lubrication, used throughout.
6. FLAT SPRING STEEL RADIUS RODS. Time proved, road proved. Guaranteed for life against breaking.

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HEADQUARTERS: EDGERTON, WISCONSIN

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Pole and Cable Reel Trailers • Winches • Power Take-offs • Service Accessories

DESIGNED, BUILT, SERVICED — *"Always a little better."*



News Reports

Continued from Page 330

Pennsylvania Overloads Decline

According to statistics secured from Pennsylvania State Police by Pennsylvania Motor Truck Association, motor truck overloading was on the decline in 1951.

Despite a 15 per cent increase in the number of trucks weighed, the number

of trucks found to be ten per cent or more above the Pennsylvania limit dropped two per cent below the 1950 figures. State Police in 1950 weighed 158,192 trucks, and in 1951 weighed 182,082. In 1950 they found 21,074 in the ten per cent or more overweight class, and in 1951, only 20,540, a decline from 13.3 per cent of the total trucks weighed, to 11.2 per cent of the total. Police only weigh trucks which show some signs of overloading, PMTA spokesman said. Many thousands of legally loaded trucks pass the police weighing details every day.

Nearly 85 out of every hundred trucks weighed were found to be within the legal limits in 1951, the statistics indicated, while in 1950, the percentage was 82.4 per cent. Just over half the trucks weighed were Pennsylvania vehicles, while 47.4 per cent were from out of state.

Bosserman Driver of Year

Earl H. Bosserman of York, Pa., who has driven commercial vehicles more than a million miles since 1927 without an accident or arrest for any violation, has been named 1951 Pennsylvania Truck Driver of the Year. The coveted award, made by an impartial board of judges, was announced at a meeting of the Pennsylvania Motor Truck Association's board of directors, in Harrisburg.

A framed certificate in recognition of his achievement and a gold watch, gift of the Motor Truck Assn., were presented to the Driver of the Year by Major E. J. Henry, traffic officer of the Pennsylvania State Police.

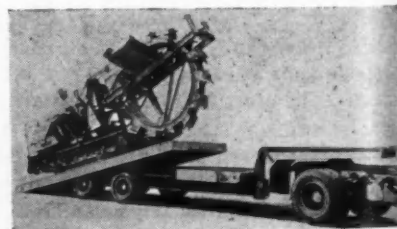
Bosserman, a driver for Hollander's Auto Store, York, was accompanied to the luncheon by H. G. Winter, general manager.

Roadero Driver Honored

Representing the three phases of the industry—manufacturer, operator, and driver—the Supervisor's Club of the White Motor Co., joined with officers of the George F. Alger Co., in paying tribute to champion driver Alex Adamski in Cleveland recently. Ted V. Rogers, honorary board chairman of the American Trucking Associations was the principal speaker at the dinner meeting.

(TURN TO PAGE 334, PLEASE)

Tilting Trailer



This gooseneck-type trailer with a tilting platform is being made by La Crosse Trailer Corp., LaCrosse, Wis. It has either 14, 18, or 20-ton capacity, tandem, with a platform 96-in. wide. The platform tilts to unloading position by releasing a lock at the front of the platform. Two hydraulic cylinders cushion the load during the tilting operation. The load is driven or winched into place and the platform lowered and locked automatically in horizontal position for rigging.

"THIS TIME—TRY *Fused Fabric*
IT CAN TAKE REAL PUNISHMENT"



"THE STANDARD
OF THE INDUSTRY"

Yes, taxi brakes take a beating in city traffic. *Fused Fabric* Brake Lining is engineered to stand the toughest use. Sell your customers the best. No other lining equals *Fused Fabric* for mileage, performance, and long run economy. Order *Fused Fabric* today!



THE RUSSELL MANUFACTURING COMPANY, MIDDLETOWN, CONN.

Butler

WATER FILTER

**RUST, SCALE and CORROSION
CAUSE TROUBLE, High Fuel Costs,
Overheating, Increased Repairs**

**Save Your Engine . . .
AND USE LESS GAS, OIL AND REPAIRS
with the Patented Model C-40**

**THE BUTLER WATER FILTER HAS BEEN USED SUCCESSFULLY
FOR MANY YEARS BY INDUSTRIES AND TRUCK, BUS, MOTOR
CAR, RAILROAD, MARINE AND DIESEL ENGINE OPERATORS**

This time-tested device has a two-fold action. The rectifier section removes and prevents the formation of mineral and rust scale, stops and prevents corrosion, and saves large sums in the life of any water-cooled engine in repair and breakdown dollars . . . The filter section collects the sludge in the glass bowl, where it is readily removed. The Butler Water Filter has no screens to become clogged, and no filter pads or cartridges which require frequent, costly replacement. One big advantage is that the water line is always open. There is nothing to stop the water flow regardless of how dirty the engine is. The device works equally well with or without anti-freeze solutions. And its efficiency remains constant regardless of draining and water replacement. The Butler Water Filter is quickly, easily installed by sales and service agents everywhere.



Manufactured by

Butler Engineering Company

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NEW ORLEANS 13, LA.

News Reports

Continued from Page 332

Driver Adamski was introduced by Alfred C. Scott, president of Alger. J. N. Bauman of White presented Adamski with keys to a new White WC-22PLT which he will use in his work for Alger. Robert F. Black, president of White Motor Co., also presented Adamski with a silver tea service and a bond.

The Greater Cleveland Safety

Council honored the rodeo champ with special safety merit award. This was presented by Appellate Judge Lee Skeel, Council president.

Safety Circus On Tour

A novel animal safety circus designed to teach traffic safety habits to school children began a 13-week tour of nine states under sponsorship of the American Trucking Associations, Inc.

The Traffic Safety Circus, featuring a troupe of trained dogs and pigeons,

is directed by Officer Ernest E. Pressley, a Charlotte, N. C., traffic policeman, as ringmaster. Its lessons already have been taught to more than three million school children and it has been endorsed by J. Edgar Hoover, Director of the Federal Bureau of Investigation, the National Safety Council, the International Chiefs of Police Association and educators and civic organizations throughout the country.

Pressley conceived the idea of teaching sound safety practices to school children through the medium of trained dogs and other animals when neighborhood children flocked to his backyard to watch his pet setter and Mrs. Pressley's collie do the tricks he taught them. Augmenting his troupe, Pressley took them on tour to all sections of the country.

Trucks Vital to Cattlemen; Less Damaging to Livestock

Just how effective truck transport is—and how essential to western ranchers—shows up in the statistics of the Los Angeles Union Stock Yards for 1950. Of the 198,000 head of cattle received from California points, all but 195 were trucked in. There are some other figures which should interest truckers, especially since they tend to combat the oft tossed out challenge that cattle haulers aren't as careful as the railroads. Here, in a nutshell, are some vivid statistics, supplied by Wade Sherrard, general manager, California Motor Transport Assn., Inc.

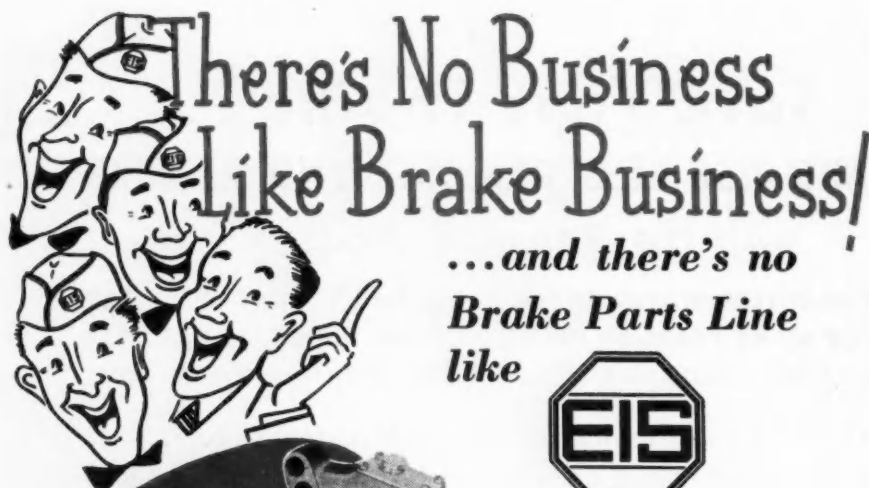
In 1950, of the total 356,000 head of cattle received at the Los Angeles Stock Yards from all points (not just from California) 255,000 or 72 per cent were brought in by truck. Only 28 per cent came by rail. Some 45 head were dead

(TURN TO PAGE 336, PLEASE)

Mixer Capacity Extended



A new application of the White 3000 with 3½-yd cement mixer offers new weight distribution which permits an additional half yard payload. Model 3020 single axle shown here, is equipped with a 3½-yard Challenge mixer. The weight distribution in this unit with its capacity load are: front axle, 7500 lb.; rear axle, 19,500 lb.; total gvw., 27,450 lb.



...and there's no
Brake Parts Line
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No Spring-Service job is complete unless you sell Brake Safety! **COMPLETE THE JOB** by "pulling a wheel," check Master and Wheel Cylinders, refill with EIS SAE Brake Fluid! **BE SURE OF THE JOB** by using and specifying EIS ... **THE COMPLETE BRAKE PARTS LINE!**

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MIDDLETOWN, CONN.

MASTER AND WHEEL CYLINDERS
Complete units, accurately cast and honed to mirror finish.

MASTER AND WHEEL CYLINDER REPAIR KITS
Contain all the parts needed for proper and speedy assembly.

"SUPER 40" BRAKE FLUID
— Meets SAE moderate duty specification R7

"SUPER 50" HEAVY DUTY BRAKE FLUID
— Meets SAE heavy duty specifications.



Ask Your Jobber or Write Us Direct.

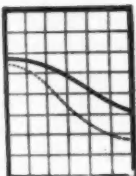
USE DELCO BATTERIES

FOR LOWER OPERATING COSTS

Delco is a battery of super strength . . . a battery that delivers fine performance at low cost! The Delco battery is ideal for fleets because it's designed for the long hard haul—built to take abuse without impairment in operating efficiency. So choose the Nation's No. 1 battery! Cut your costs! Delco batteries are available everywhere.



NOW YOU GET ALL THESE NEW FEATURES IN EVERY DELCO BATTERY



MAXIMUM STARTING POWER!

In life performance tests, Delco batteries showed maximum starting power, after months and miles of operation!



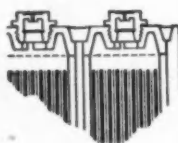
NEW BATTERY RUGGEDNESS!

Exclusive high temperature vapor treatment of plates creates stronger, longer-lasting bond . . . insures greater resistance to shock and distortion.



NEW SUPER-QUICK STARTS IN COLD WEATHER!

Exclusive, patented "expander" formula used in making negative plates for Delco batteries produces greatly improved cranking action in cold weather.



NEW "BALANCED" GRAVITY RATING FOR FINEST PERFORMANCE!

"Balanced" gravity gives Delco batteries *definitely* longer life . . . *increased* starting power . . . greater *freedom* from trouble at extreme temperature ranges.

PLUS—"tailored" cases for each battery model. Special sealing compound to prevent cracking and leaking. Visual filling device for instant servicing.

DELCO BATTERIES

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SERVICE

A UNITED MOTORS LINE

DISTRIBUTED BY WHOLESALERS EVERYWHERE

UNITED MOTORS SERVICE

Division of General Motors Corporation

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Detroit 2, Michigan

News Reports

Continued from Page 334

on arrival by truck, while 48 were dead in the railcars. Yet trucks carried three times the number as railroads. Sixty-nine thousand calves arrived at the same yard, 55 were dead on arrival, while 56 rail-transported calves arrived dead. Of the grand total 416,000 livestock received by truck in Los Angeles Union Stock Yards for 1950 (cattle,

sheep, goats, hogs and horses), only 153 were dead on arrival. Railroads brought in a total of 369,000 animals (many of them hogs from the mid-west), yet 327 were dead on arrival. Summed up, a total of 808 animals were killed and crippled by truck transport; 1631 were killed and crippled by railroads.

Tanker Study Made

In a recently released study of Petroleum Transportation, the Petroleum

Administration for Defense made the following recommendation regarding tank trucks and truck trailers:

"The report establishes a January 1, 1951, inventory of 10,692 straight trucks (single units of 2000 to 3000 gal capacity) and 26,783 trailers and semi-trailers.

"To meet future demands, the report says, this fleet will by the end of 1952 have to be expanded by 1538 straight trucks, 5555 semi-trailers and trailers, and 8500 tractor units.

"In addition it is estimated that 1800 straight trucks and 1883 trailers and semi-trailers are required to replace scrappage during 1951 and 1952."

Actually, 1951 production came close to meeting their estimate of requirements for the two-year period. The actual production was 5961 more than enough to meet the needs for expansion but only about half as many more as would be required to meet the estimated additional requirements because of scrappage.

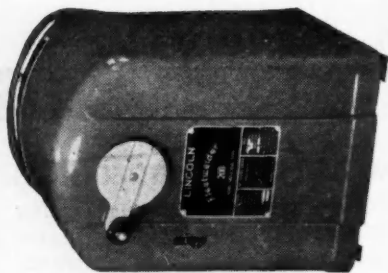
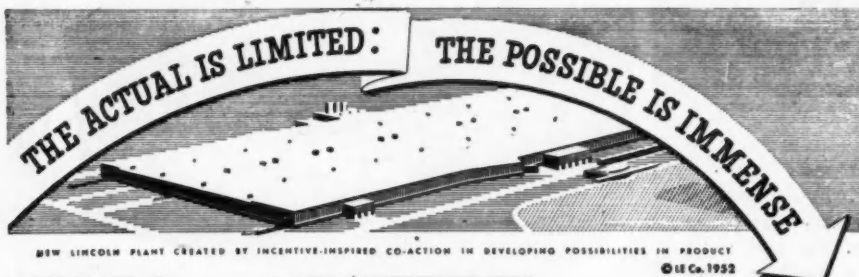


Fig. 3—LINCOLN "FLEETWELDER 200 AC"
Today's most versatile arc welder. Has wide range to handle $\frac{1}{8}$ " to $\frac{1}{4}$ " electrodes. Built of rugged, industrial construction, yet sells for less than other comparable arc welders.

LOW PRICED "FLEETWELDER" INSURES LOW COST REPAIRS

Repairs are Easier. With "Fleetwelder's" exclusive "Arc-Booster," the arc starts automatically every time the electrode touches the work. Eliminates electrode sticking... simplifies welding.

Repairs are Stronger. You get instant penetration at the start of every weld. And "Fleetwelder's" steady, easy-to-hold arc turns out dependable welds in flat, vertical or overhead positions... on cast iron or steel... on light or heavy work.

Easy to Install. "Fleetwelder" is compact, portable... moves about your shop on wheels. It operates on single phase current.

LINCOLN WELDED REPAIRS SAVE MAN-HOURS CUT COSTS

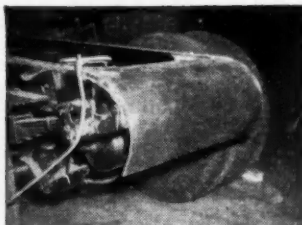


Fig. 1—Adds Bumper Guard. $\frac{1}{4}$ " plate is rolled and welded to truck frame channel. Protects air tank from accidental damage when backing.



Fig. 2—Repairs Cracked Frame on dump truck. Broken "I" beam member is straightened with a jack and welded with "Fleetwelder's" $\frac{1}{2}$ " plate is fillet welded to bottom of beam for added strength.

* Preferred standard for welding electrodes on quality work.

SHORT CUTS MAN-HOURS

Bulletin 1301 on "Fleetwelder 200" free on request. Write to Dept. 322.

THE LINCOLN ELECTRIC COMPANY

CLEVELAND 17, OHIO

The World's Largest Manufacturer of Arc Welding Equipment

Steel Shortage Continues

The availability of structural steel shapes and plate for highway construction in the third quarter of 1952 will continue to be "critical" but an increase in the supply of reinforcing steel bars is expected to cut down the number of delayed road projects, according to A. C. Clark, deputy commissioner of the Bureau of Public Roads. Improved supply of reinforcing bars, Mr. Clark said, "should permit construction of

(TURN TO PAGE 338, PLEASE)

Walter Crash Truck



Equipped as a fire fighter, airport crash and rescue truck this Walter unit, Model AGUL, offers a 1300 gal fog-type fire extinguisher which Walter states is the largest capacity offered on the market today. The truck is a four-wheel drive, 240-hp unit which mounts 16:00 x 24 tires, giving it maneuverability and speed either on a runway or cross-country, through mud or snow. The unit carries 1300 gal of water and 130 gal of foam liquid.

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TIP FOR LONG
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MATCHLESS GEMS OF QUALITY IN
"THE CROWN JEWELS OF IGNITION"

... stands alone in any comparison of quality!

The twelve gems of quality found in Filko Distributor Caps and Rotors are twelve reasons why Filko stands first in performance and profits. It is the combination of these matchless gems that give "the Crown Jewels of Ignition" this extra measure of

service and performance. A careful inspection of these twelve "gems of quality" will show you why Filko stands alone in any comparison. It will show you why it pays to standardize on "the Crown Jewels of Ignition"... Filko Ignition Replacement Parts!

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COILS • CONDENSERS • BRUSHES
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SWITCHES • CUT-OUTS • RELAYS
AND REGULATORS

News Reports

Continued from Page 336

reinforced concrete structures in connection with grading operations, sub-structures for large steel bridges, and the building of reinforced concrete pavements."

Mr. Clark reviewed the difficulties which have confronted the necessary road construction work under the Controlled Materials Plan. He discussed in detail the following actions which are

being considered or taken by BPR to permit more intensive construction planning and timing so that steel can be utilized in the calendar quarter in which it is allotted. He suggested:

"Permit state, county and local highway departments to self-certify road projects which will require 25 tons or less of carbon steel—not more than 2 tons of which is structural shapes. Under this authority, hundreds of small projects throughout the nation could get underway almost immediately and the steel tonnage necessary to complete

them would not be deducted from the total highway steel allotment.

"Once a state has approved a road project which is under the jurisdiction of a county or local highway department, BPR is considering making a direct allotment for the necessary steel to the highway department concerned. Under present procedure, BPR has a quota for each state from which tonnages are allotted for each job.

"There is considerable lead-time required in the design of highway structures and the awarding of contracts and general preparation of the work by steel fabricators before the structures can be erected in the calendar quarter for which allotments are made, BPR is, therefore, asking for increased advance allotments of steel to permit this construction planning. Through this method it is hoped to cut down costs of construction by avoiding special-delivery prices."

Some Shortages Slacken

"It begins to look as if some of the materials shortages, which have plagued the manufacturer as the country swung into the defense program, are easing."

This statement was made recently in a report by the Chamber of Commerce of the United States. Government allocators are giving up much of their scare talk in the face of mounting stock-piles. Instead, they are slowly relaxing many production controls and are considering relaxing restrictions on still other supplies that go into the manufacture of civilian goods, the report said.

One reason for the increasing stocks of materials and lower prices is that sights were set too high for defense production. Materials were held out of civilian production channels but defense production lagged and materials began to accumulate.

The decision to extend the defense production period lessened immediate demand for defense materials. Meanwhile civilian allocations had been set and materials could not be loosed quickly enough to take up the slack. While steel was curtailed for many civilian uses, for instance, steel producers in some cases had to cut their output because defense production was not ready to absorb the total.

Tire Shipments Increase

Manufacturers' shipments of passenger casings, during January, increased 54.39 per cent to 5,109,420 casings from 3,309,397 casings in December, according to the monthly report of The Rubber Manufacturers Association, Inc. (TURN TO PAGE 340, PLEASE)



Brighter Beacons for Safety — Service

● The sparkle and brilliance of the Grotelite shatterproofed plastic lens makes this jewel-like marker lamp the bright beacon for highway safety. Built for heavy duty truck service, the No. 204 is resistant to weathering — gives longer trouble-free wear with less maintenance cost. Designed for mounting on curved cab or fender surfaces, this streamlined beauty has high visibility to both front and sides.



No. 205
Economical model for roof or corner mount. Light transmitted through front section only of one-piece shatterproofed plastic lens top.

Sold by Leading Automotive Jobbers Everywhere

THE **Grote** MFG. CO., INC.
GROTE SQUARE BELLEVUE, KY.
Opposite Cincinnati



Grote's new automotive factory at Seymour, Ind., facilitates prompt deliveries of Grote's "Truk-Line" lamps and reflectors.



No. 70
Most compact, lowest priced reflector flare set.



No. 610
Clear and non-glare—rubber mounted—round or rectangular mirrors.



No. O-110
Rugged construction... brightest reflection—round or oval reflectors.



No. 200
Strongest armored clearance lamp. Fresnel type shatterproofed lens.

"Same shop capacity... Same manpower... but
**WE'VE DOUBLED OUR VOLUME
 IN JUST TWO YEARS"**



says **J. D. BURKE**, Service Manager
 of **LAMMERTS, INC.**
 Niagara Falls, N. Y.

"I could hardly believe it myself, till I saw the figures," Mr. Burke continues. "Our body shop has always had capacity business, but it took the FLEXBAC method to show us how we could increase our output. 1949 was a banner year, but 1950 was 66% bigger, and our 1951 business was exactly 124% over 1949—two

and a quarter times greater. Need I add that we're enthusiastic boosters for the FLEXBAC method?"

Shop after shop, coast to coast, echoes Mr. Burke's enthusiasm. FLEXBAC method actually eliminates 85% of the tedious hand sanding usually required in autobody refinishing...lets you turn out far more jobs in the same time, with no sacrifice of quality. Let us give you full details. Write Dept. CC 90-58.

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Flexbac[®] Method



- **RED-I-CUT Waterproof Paper Discs**
— long-lived... fast-cutting... non-peeling.
- **FLEXBAC Pad Assembly**
— ideal for contours and reverse curves.
- **FLEXBAC Masking Tape**
— easy-on... holds tight... easy-off.

the superior autobody products by

CARBORUNDUM

TRADE MARK

"Carborundum", "Flexbac" and "Red-I-Cut" are trademarks of The Carborundum Company, Niagara Falls, New York.

News Reports

Continued from Page 338

Shipments of truck and bus casings in January increased 17.50 per cent to 1,419,603 casings from 1,208,197 casings in the previous month. Production increased to 1,606,269 casings from 1,543,384 casings for the month of December, an increase of 4.07 per cent. Inventories totaled 1,969,118 casings, an increase of 9.61 per cent from the

end of the previous month when 1,796,442 casings were in stock.

Diesel Schools Continue

To meet the growing demand for trained diesel mechanics, the GMC Truck & Coach division is continuing its mobile diesel service training schools indefinitely.

The mobile schools, mounted on GMC diesel trucks, have appeared in nearly every city where there has been a need for diesel mechanics and now have started to re-visit many points

where additional mechanics are in demand. The schools give experienced mechanics a five-day course, which includes work on live GMC diesel engines and subassemblies while teaching operation, maintenance and overhaul. Each school is limited to 12 students, who are under the supervision of factory-trained instructors.

Scrap Situation Brighter

The general scrap metal situation is not quite as serious now as it was six weeks ago, according to reports presented by the NPA Trade Association Information Advisory Committee.

Iron and steel scrap supply has improved so that those furnaces previously closed down because of scrap shortage are now operating and, in fact, no furnaces are reported out of production because of scrap shortage. Despite the heroic efforts of all concerned, favorable weather in most sections of the country in the past several weeks was given a large share of the credit for this supply improvement.

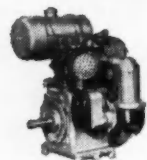
NPA officials were concerned lest industry generally relax its scrap collection efforts because of the reported surplus of cast iron scrap and the resulting break in the price below the established ceiling for this grade of scrap. It was pointed out that cylinder blocks released by auto wreckers in accordance with the provisions of NPA Order M-92 have been processed into scrap in such tonnage as to more than meet the demand for cast scrap.

Steel making grades of heavy melting scrap, however, are still in urgent demand and it was stated that the general inventory position of the mills has improved only by about one day. That is, mills that were operating on only a three-day inventory may have a four-day inventory at the present time.

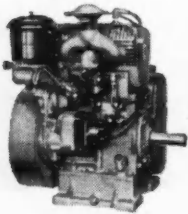
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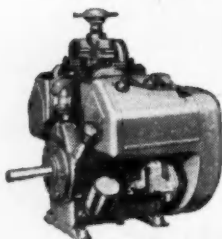
Powering LOADERS or REFRIGERATION UNITS...



3 to 9 hp.
single-cylinder models.



7 to 13 hp.
2-cylinder models.



15 to 30 hp. V-type
4-cylinder models.

WISCONSIN HEAVY-DUTY Air-Cooled ENGINES Fit the Job and the Machine

Wherever you put engine power to work... in the warehouse on "Xpediters" and fork trucks, or in refrigeration units on the road... your wisest and most popular choice is equipment powered by Wisconsin Heavy-Duty Air-Cooled Engines.

Such unmatched features of superiority as these are a part of every Wisconsin Engine: For example, Timken Tapered Roller Bearings at both ends of the crankshaft absorb all thrusts and reduce bearing failure danger. Also, freeze-proof, heat-proof air-cooling provides efficient all-season cooling. Couple these super-features with an easily-serviced OUTSIDE magneto with impulse coupling for quick-starting and steady-running... and you have the reasons why Wisconsin Engines are first choice almost everywhere among equipment builders, dealers and users alike.

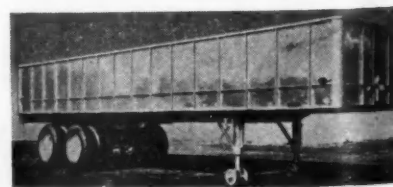
Write for "Power-Magic" telling about all 4-cycle single-cylinder, 2-cylinder and V-type 4-cylinder models, 3 to 30 hp.



WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 46, WISCONSIN

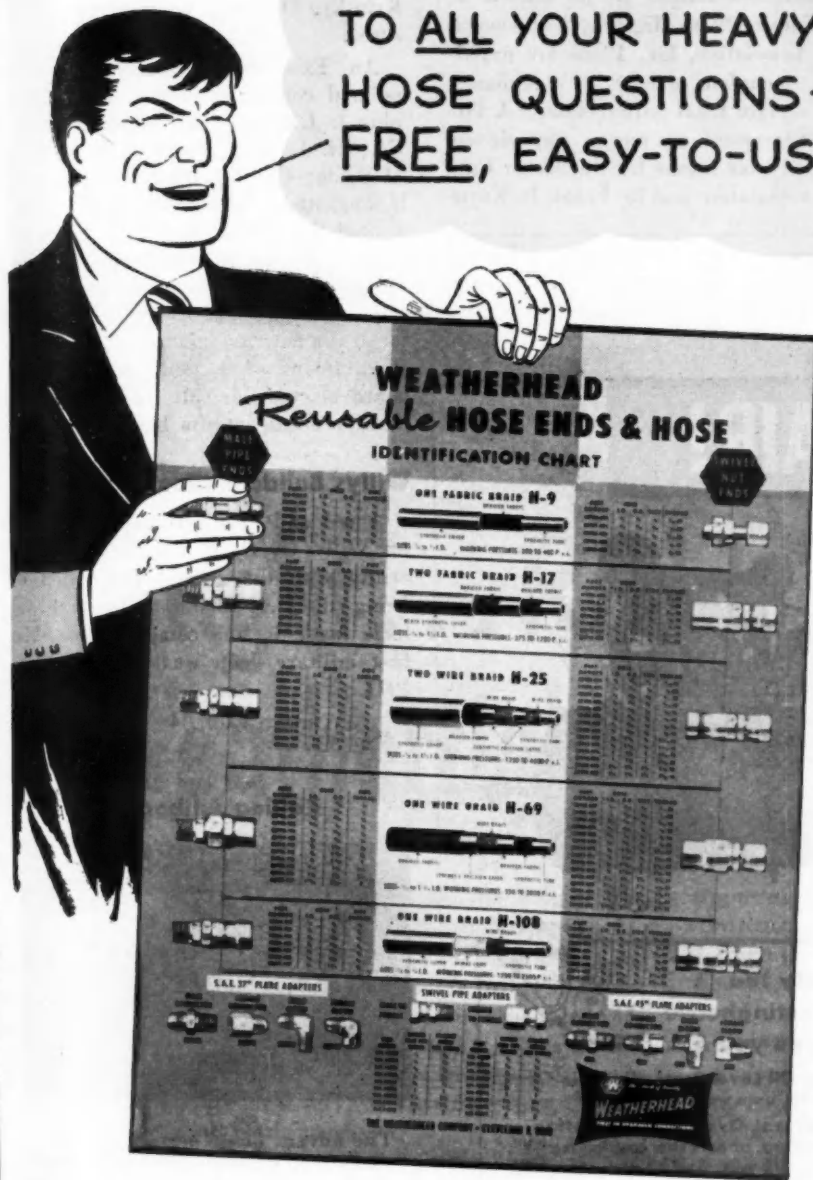
Fruehauf Tandem



A grain-hauling trailer is getting into production at the Fruehauf Trailer Co. plant in Memphis, Tenn. It is made of corrugated aluminum, open top, available for 25,000 lb payload with a single axle or 36,000 lb tandem. The optional offerings include a choice of steel or aluminum cross members either on a 12-in. or 24-in. center. Both single and tandem models call for 15/16 in. dry freight magnesium flooring.

CAPT. EASY Says:

HERE ARE THE ANSWERS
TO ALL YOUR HEAVY DUTY
HOSE QUESTIONS-GET THIS
FREE, EASY-TO-USE WALL CHART



**Weatherhead
reusable hose
and hose ends
are *EASY* to use**

Now you can make immediate replacements of any size, any length, any type heavy-duty fluid or hydraulic lines with minimum effort, minimum inventory. The ten types of Weatherhead reusable hose ends and five types of Weatherhead heavy-duty hose, easily cut to required lengths, will cover any need you could ever have. You'll save time, you'll save money—and you'll save inventory problems.

TO GET YOUR FREE COPY of this handy 17" x 22" wall chart, attractively printed in four colors, write us on your company letterhead, stating the number of charts you need. Address: THE WEATHERHEAD COMPANY, Dept. T, 300 East 131st Street, Cleveland 8, Ohio. In Canada: THE WEATHERHEAD COMPANY OF CANADA, LTD., St. Thomas, Ontario.

The **EASY** line to use is . . .



News Reports

Continued from Page 340

Supplies of non-ferrous scrap, copper, brass, bronze, lead, and aluminum, were all reported to be in a little bit better condition than previously. However, these are still urgently needed in the defense effort.

New York Associations Meet

A joint meeting of the board of directors of the New York State Motor

Truck Association, Inc. and the Motor Carrier Association, Inc. was held at the Hotel Statler, New York City recently.

A report from the attorneys informed the gathering of the progress of the merged associations to be known as the Empire State Highway Transportation Association, Inc. Plans are practically complete except a compliance with certain legal requirements. A formal agreement to merge was signed by W. Foster Banks for the Motor Carrier Association and by Frank B. Kurtz

for the New York State Motor Truck Association.

L. S. Carroll, Red Circle Freight Lines, was elected President, Jos. P. Hackett, Jos. Taylor Trucking Corp., Vice-president, Fred N. Dorn, Dorn's Transportation, Inc., Secretary, Max Krinsky, Highway Express Co., Treasurer.

An Executive Committee was appointed consisting of the four officers plus J. J. Carey of Hoffman Beverage Co.; H. Leon McBride of H. L. & F. McBride; Chas. A. Pascarella, Francis H. Leggett & Co.; and Joseph L. Sellers, United States Trucking Corp. This executive committee was expressly instructed to screen all candidates for the important position of managing director of the new Association. Pending the appointment of a new manager, the board elected Jos. M. Adelizzi to this position on an interim basis.

Willys Builds Millionth Jeep

A red and gray civilian Jeep rolled off Willys-Overland assembly lines recently with the special distinction of being the 1,000,000th utility-type vehicle made by the company since the first military Jeep was built in Nov., 1941.

(TURN TO PAGE 344, PLEASE)

Rolling Billboards



The advent of man-high, double capacity route truck bodies on forward-control chassis provided door-to-door deliveries with traveling billboards in exclusive neighborhoods and congested business districts where money could not buy conventional advertising billboards.

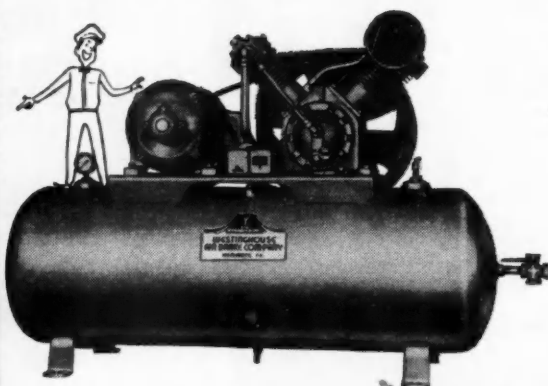
A toy shop in Reading, Pa., has set a new high in taking advantage of this medium. One side reproduces a lion cage; the other side is a replica of a tiger cage. The front quarter section sports a monkey, favorite of all small children. The value of these displays is reflected in the increased business from parents responding to their youngster's appeals to have toys delivered to them in the new truck.

The big body is made of aluminum alloy. Because of its light weight, it is mounted on a 3/4-ton chassis and has the additional advantage of being able to carry bulky items that were formerly delivered in heavy, bulk trucks.

NO OIL—

NO AIR!

that's why the
Westinghouse
"Y" saves
money for you!



With most machines, *no oil* means a repair job. When someone forgets to lubricate, the oil-starved unit runs itself right into the repair shop.

With the Westinghouse "Y" Compressor, it's a different and happier story. The "Y" gives you warning when the oil level is too low; it refuses to pump air. If the level drops during operation, the "Y" unloads. This S.O.S. lets you supply oil before scoring, seizing or other damage occurs.

This exclusive "No Oil—No Air" protection has saved countless repair bills for users . . . and it's only one of a parade of modern features you get in the Westinghouse "Y". Thermal overload protection—Starting Unloader . . . automatic pressure control . . . automotive-type pressure lubrication . . . multiple V-belt drive. Every one helps

Only the
Westinghouse "Y" gives you ALL THREE

Low Oil Level Protection—No Oil—No Air, bans wear and repair.

Thermal Overload Protection—Standard, at no extra cost, on the "Y".

Starting Unloader—Compressor remains unloaded till speed and oil flow are normal.

to give you a more dependable, economical air supply. And that's a big consideration *today*—that no one can afford to overlook!

Westinghouse "Y" capacities range from 6.2 to 68 cfm displacements . . . motor HP from 1 1/4 to 15. Gas engine drive also available. Horizontal or vertical tanks.

Westinghouse Air Brake Co.

Industrial Products Division—WILMERDING, PA.
Factory Branch: EMERYVILLE, CALIFORNIA

ASK FOR
BULLETIN
IDC 9302-3.
FOR FULL
DETAILS

DISTRIBUTORS THROUGHOUT THE UNITED STATES . . . CONSULT YOUR CLASSIFIED DIRECTORY
DISTRIBUTOR IN CANADA: CANADIAN WESTINGHOUSE CO., LTD., HAMILTON, ONTARIO

Truck
Freight
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Corp.,
Dorn's
Max
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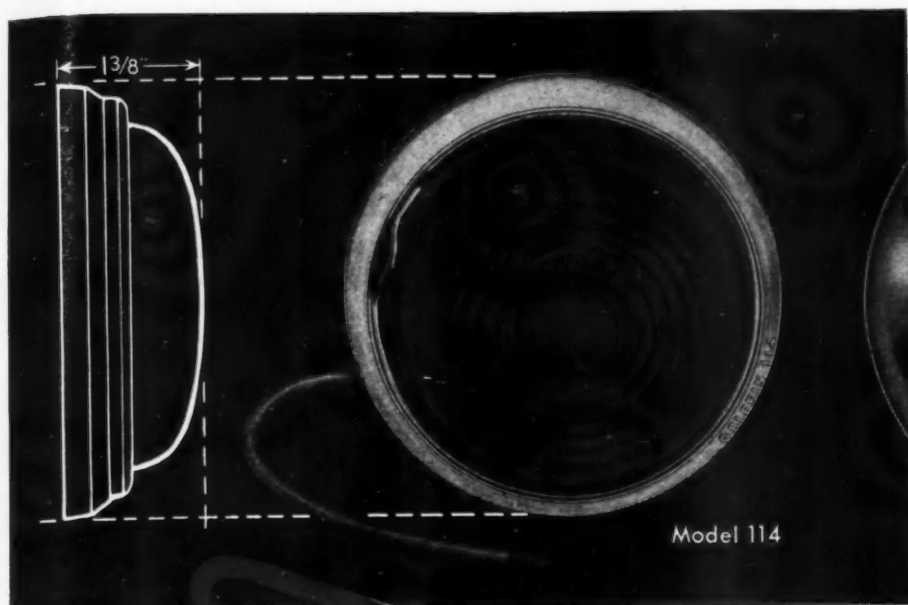


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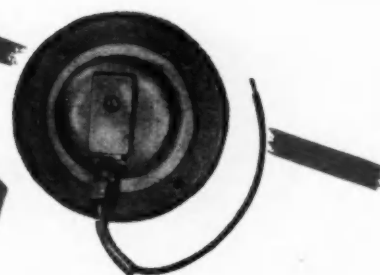
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April, 1952



Model 116-P
Model 116

Bright... Right Weathertight



Get Griffin — the right line, the bright line in superior clearance and marker lamps.

Take Griffin model 114 for example. This unique lamp is so flat it hugs inside the rub-rail, completely protected from blows, bumps, side-scrapes. The beacon-type lens has terrific visibility, from rear, front and side. Body is *one-piece* non-ferrous casting—it can't rust even on cattle trucks.

Another outstanding Griffin lamp is No. 116-P. It's absolutely vapor-proof—fumes, dust and moisture are sealed outside this flush-

mounting lamp by means of a *one-piece* body construction, with *molded-in* connector socket. Perfect for tank, refueler and other trucks where gas fumes are dangerous. No. 116 is same lamp without vapor-proof feature and is therefore less expensive.

Every Griffin clearance-and-marker gives long trouble-free service. Bulb replacement is simple. Juggling of parts is eliminated. Easy to install—easier to service. It pays to standardize with Griffin—the complete line of all fleet safety lighting.

THE GRIFFIN LAMP COMPANY • HAMILTON, OHIO



MODEL 110

Smart universal
sweep mounting
to fit new truck
and bus body
designs.



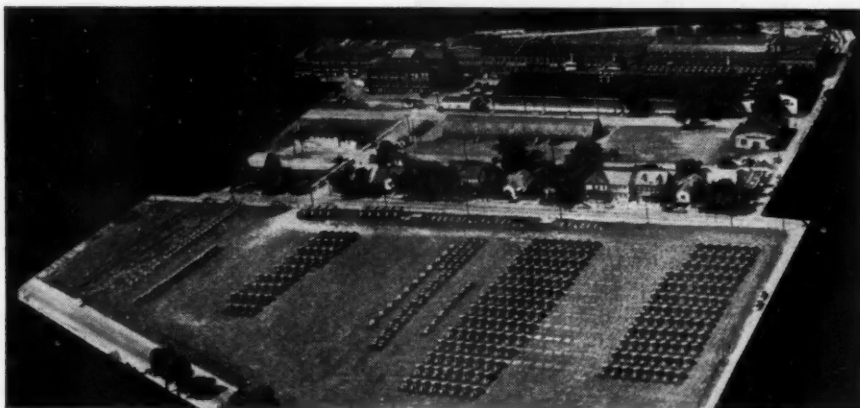
MODEL 112

Heavy, rugged
clearance or
marker. Completely
protected from
bumps and scrapes.



MODEL 117

Modernistic,
streamlined
clearance and
marker lamp for
curved surfaces.



News Reports

Continued from Page 342

York-Hoover Celebrates

1952 marks the 60th Anniversary of the York-Hoover Corporation, York, Pennsylvania.

In its history York-Hoover has many "firsts" to its credit. It played an important part in converting the public utility industry from horse-drawn vehicles to motor transportation; it built one of the first franchise-operated passenger bus bodies to operate in the East; it assisted in redesigning the horse-drawn U. S. Mail vehicle for use on a motor truck. The first "Jeep" body was manufactured by York-Hoover at the start of World War I and in World War II it was the first plant in the Philadelphia Ordnance District, which embraces seven states, to be awarded the Army-Navy "E" Flag with 4 Stars.

At the present time the Body Division of the York-Hoover Corporation is again helping to rearm America in addition to supplying civilian needs. Current products include a complete line of body units for the public utility field as well as body designs for Railway and Motor Freight Haulers, Bakeries, Dairies as well as the Frozen Food and Soft Drink industries.

Throughout its 60-year history, York-Hoover has experienced a steady growth and today the Body Division operation covers an area of about 5 acres.

Fruehauf Sales Set Record

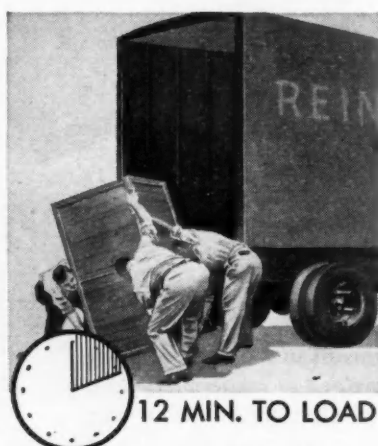
The Fruehauf Trailer Co.'s sales in 1951 set a new record of \$161,612,310. This is an increase of more than 22 per cent over the \$132,123,537 of sales in 1950, when total volume exceeded the \$100,000,000 mark for the first time in the Company's history, according to the report.

"Although business volume was higher than in 1950, costs were also increased," the report said. "An important factor was the freezing of trailer prices during part of the year, while prices of raw materials, wage and salary rates continued to rise. The cost of establishing assembly lines for defense work was also a factor.

"Earnings after taxes were \$6,210,108 amounting to \$3.94 per common share after payment of preferred dividends, compared with \$8,620,035 and \$5.59 a share in 1950."

(TURN TO PAGE 398, PLEASE)

WHICH WOULD YOU SAY IS THE BETTER WAY— TO LOAD YOUR TRUCKS



12 MIN. TO LOAD



4 1/4 MIN. TO LOAD



Loading and unloading can be cut to a fraction of the usual time—with less manpower—with Anthony LIFT GATES. Wheel the load on . . . raise it with hydraulic power . . . wheel it into the truck. Daily deliveries are practically doubled with less merchandise damage and fewer personnel accidents. One man can easily handle heavy, bulky loads with a LIFT GATE to do the lifting. Load or unload from curb, dock and ground levels. Available in types, and with power closing, to fit your needs.



A demonstration will show you why LIFT GATES are used in over 123 industries to make more deliveries per day with less equipment and manpower. There is no obligation.



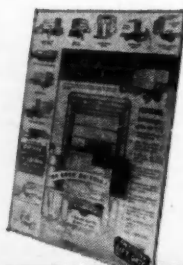
MODELS FOR ANY
TRUCK 1/2-TON TO
HEAVY SEMI-TRAILERS

**USE THE LIFT GATE
WAY TO MAKE TIME PAY**

Write for distributor's name on your company letterhead. Ask for a demonstration or a "MODEL" that shows how to evaluate your need for a LIFT GATE. Address Dept. 401.

**ANTHONY
LIFT GATE
HYDRAULIC**

**ANTHONY COMPANY
STREATOR • ILLINOIS**



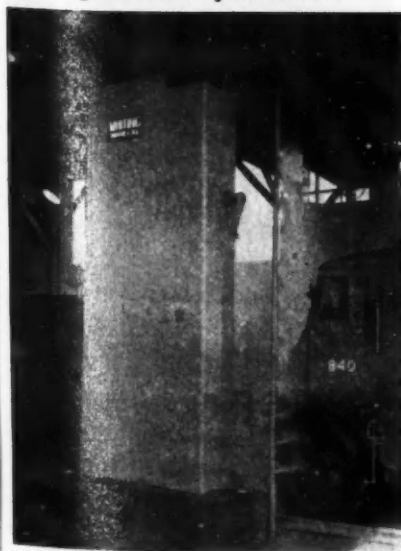
Ready for Full Dress Inspection!



Photos courtesy Consolidated Freightways, Inc.

REQUIRES LITTLE SPACE

Engineered to your needs



Maintaining a good public appearance does not mean that you have to retain the old-fashioned, intermittent hand washing method that is so costly.

The Whiting Washer, with a brush arrangement that exactly meets your needs, is a new approach to efficient maintenance. It puts the "Spit and Polish" method where it belongs—in antiquity. Send the coupon for more information on this time and moneysaving equipment.

WHITING*

*Reg. U. S. Pat. Off.

WASHERS FOR BUSES & TRUCKS

Send the Coupon for Complete Details

Whiting Corporation
15695-C Lathrop Ave.
Harvey, Illinois

Please send information on
Whiting Washer.

Name _____

Address _____

City _____

State _____

CLOYES

Timing Gears

**MADE TO CAR
MANUFACTURERS'
SPECIFICATIONS**

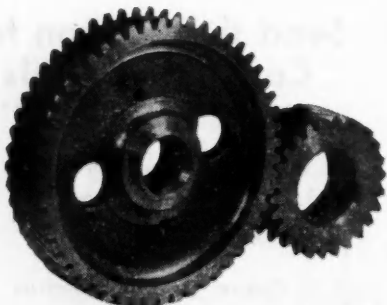
**A COMPLETE LINE
TO MEET EVERY
CUSTOMER REQUEST**

WIDE COVERAGE ON LATE
MODEL GASOLINE ENGINES
FOR TRUCK AND INDUSTRIAL
APPLICATIONS INCLUDING
CONTINENTAL - INTERNATIONAL
REO - WHITE

GEARS ARE CROWN SHAVED
FOR MAXIMUM ACCURACY AND
QUIET OPERATION.

*Timing Gear Specialists
Since 1921.*

Write for Address of Your
Nearest Cloyes Jobber.



CLOYES

GEAR WORKS, INC.

17214 ROSELAND ROAD, N. E.
CLEVELAND 12, OHIO

News Reports

Continued from Page 344

Pardon . . . Our Slip's Showing

Words were tangled when we edited George Davis' article, "Accident Review Board Spurs Safe Driving," in the February issue of *COMMERCIAL CAR JOURNAL*. On page 120, near the end of the story, we said that the parent company of the Lasham Cartage Co. was Universal Cartage Co. of New York. This was an error, as another New York firm, the United States Freight Co., is the real papa.

Cartridge Cases Reclaimed

Army Ordnance Corps is effecting some substantial savings in cost of ammunition and conserving a significant tonnage of scarce materials through reclaiming brass from fired shells picked up from the battle fields of Korea and recovered from camps in this country. At the Red River Arsenal alone, more than 12,000 tons of used cartridge cases have been returned for salvage, resulting in a net gain of \$3.6 million after deducting costs.

Construction Cost High

The cost of construction of the nation's highways reached an all-time high in the fourth quarter of 1951 according to the Bureau of Public Roads. At the end of the year the composite mile index stood at 166.7 per cent of the 1925-1929 base period costs. The previous peak was the fourth quarter of 1948 when the index was 165.3.

Accident Decrease Reported

In spite of an increase of 30 per cent in total over-the-road miles, West Coast Fast Freight, Inc., Los Angeles, Calif., reports that their 400 drivers have sliced their accident record by nearly one-third.

In making the report, E. R. Crippen, director of safety for West Coast, said that in 1950, the trucking firm had an accident ratio of $1\frac{1}{3}$ accidents per 100,000 miles and that in 1951 the ratio was 1.023 accidents in the same mileage index.

In compiling the total, Mr. Crippen said, every accident from a two-inch fender scratch to a collision was considered.

The leaders in the West Coast safety record, were a group of drivers assigned to one of the company's most difficult runs from the standpoint of weather,

(TURN TO PAGE 400, PLEASE)

Hercules

TRUCK EQUIPMENT



DUMP BODIES

Medium and Heavy Duty

HYDRAULIC HOISTS

*For Dump, Grain and
Platform Bodies*

TRAILER DUMP BODIES & HOISTS

(with and without trailers)

PICK-UP DUMP CONVERSIONS

LOAD-N-GATE

Hydraulic Lift Tail Gates

LIME-FERTILIZER SPREADERS

SPLIT-SHAFT POWER TAKE-OFFS

MECHANICAL POWER CHUTES

For Coal—Other Material

CEMENT SPREADERS

For Soil Cement Roads

HERCULES

STEEL PRODUCTS CORPORATION

Gallien, Ohio
Dept. 401



"We use Purolator Micronic Oil Filters on the Rheingold Fleet!"

... says Mr. GEORGE GEDDIE, Fleet Superintendent,
Liebmann Breweries, Inc., New York, N. Y.

Mr. Geddie—a fleet-operation expert, with many years' experience in heavy vehicle maintenance—has tested Purolator* Micronic Oil Filter Elements in thousands of miles of service on the Rheingold Fleet. He sums up the record this way:

"Purolator Micronic Oil Filters are the best we have ever used. Our fleet maintenance costs are unquestionably lower because of the excellent job these Purolator units do."

Like thousands of other fleet maintenance men all over the nation, Mr. Geddie has found that Purolator—and Purolator alone—delivers the consistently high filtration performance that gives lasting engine protection . . . and substantially lower maintenance costs.

The best way to be convinced that Purolator Micronic* Oil Filters and Refills can cut your own engine maintenance costs is to try them! Write for complete information on Purolators best suited to your particular requirements. And remember . . . Purolator's Fleet Service Department is always

*Reg. U.S. Pat. Off.

ready to help you solve filtration problems, small or large, for one truck or a fleet!

Only Purolator Micronic filtration gives you all these extras—

- ✓ UP TO TEN TIMES the effective filtering area of old style filters.
- ✓ MAXIMUM EFFICIENCY: Purolator Micronic element traps particles down to microns small (0.000039 in.)!
- ✓ MAXIMUM FLOW RATE: The amazing efficiency of the Purolator Micronic element assures highest filtration rates and long service life.
- ✓ WILL NOT REMOVE OR ABSORB ADDITIVES: With Purolator Micronic filtration you keep all the oil quality you pay for!

PUROLATOR PRODUCTS, INC.
Rahway, New Jersey and Toronto, Ontario, Canada
Factory Branch Offices: Chicago, Detroit, Los Angeles



Here is ENGINE PERFORMANCE YOU NEVER BELIEVED POSSIBLE!

AMPCO injects a metered vapor-spray of properly compounded lubricant into the hottest, driest, busiest part of an engine, without dilution by the fuel, evenly, to all cylinders. Power-robbing gum-carbon-lead residues are reduced (illustrated in these actual test photos.) AMPCO lubrication cuts wear factors in half on rings, valves, guides, pistons and cylinder walls. AMPCO-Equipped engines develop more power with compression-sealing oil film, and operate for thousands of plus-miles at unbelievably low maintenance cost.



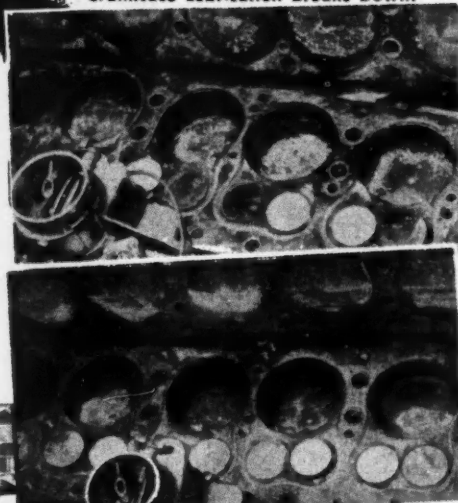
FOR THE LIFE OF AN ENGINE

Patents Pending



AUXILIARY LUBRICATION

Positive Lubrication Where Crankcase Lubrication Breaks Down!



Upper photo: Before Ampco Installation. Lower photo: 1577 Miles after Ampco Installation.

(NOTE: No mechanical work performed before or after.)

A Constant Oil Source for the Engine's Heat-Friction-Wear Zone

Product of
AUTOMOTIVE & MARINE PRODUCTS CORP.
BOSTON 34, MASS.



CLEAN CONCRETE FLOORS LAST LONGER... Keep yours clean for less than 4¢ per 100 sq. ft.

The longer you let dirt, grease and oil lay on your floors, the sooner you'll have to repair them. Concrete floors will last indefinitely if you keep them clean! For less than 4¢ per 100 sq. ft. you can not only clean your floors, but whiten and harden them as well.

Magnus Cement Cleaner, a concentrated cleaner, makes a low-cost, fast-working cleaning solution when mixed with water. Used for years by thousands of garages... sold with a "satisfaction or money back guarantee."

Write for complete information. Ask for Bulletin No. 22.

MAGNUS CHEMICAL CO. • 38 South Ave., Garwood, N. J.
In Canada — Magnus Chemicals, Ltd., Montreal.
Service representatives in principal cities.



MAGNUS

CLEANERS • EQUIPMENT • METHODS

News Reports

Continued from Page 398

highway and pavement. This run is a 200-mile stretch between Spokane, Wash., and Missoula, Mont., on U.S. 10. Two mountain passes and heavy winter snow make it a gruelling shift for the driver of a 20-ton rig. The crew assigned to that run, did not touch a fender.

Absenteeism Costs Given

A cost figure has been placed on the overall average cost per employee for absenteeism. This figure results from a survey of the entire labor situation for all industry by Benson Laboratories, Inc., Pittsburgh, Pa. While separate sections of industry in general may take exception to this figure, it does represent an index by which the fleet operator may place a cost figure.

This survey, probably the first of its kind ever made, covered 249 representative companies in all sections of the country. It revealed 3 significant facts:

1. Less than 25 per cent of the companies surveyed maintain any records whatever of employees absences, this in spite of indisputable knowledge that absenteeism disrupts operations, slows down production in both plant and office, and is therefore an expense factor of sizeable proportions.

2. Only 8 per cent of the companies surveyed maintain records complete enough to permit their use in determining the cost of absenteeism.

3. The average cost of absences among companies keeping accurate records is \$56.02 per employee per year. This is the direct cost only—wages and salaries paid to employees for time lost and for work not done.

Based on this average the total cost of absenteeism to American industry with its 60 million workers is more than 3 1/3 billion dollars per year.

Production to Change

Koppers Co., Inc., has announced that, effective April 1, it will confine its piston ring manufacturing operations to the aircraft and industrial rings. Announcing this change in operations at the Koppers piston ring plant which heretofore has also produced automotive rings, Walter F. Perkins, vice president and general manager of Koppers Metal Products division, said:

"Koppers has been a leader in the industrial and aviation ring field for years. By focusing all our attention on these specialized fields, we will be able

(TURN TO PAGE 402, PLEASE)

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April, 1952

NYLON CORDS PROTECT AGAINST ALL THESE CAUSES OF TIRE FAILURE

HEAT—Nylon cords can withstand hotter temperatures than a tire will ever encounter on the highway in normal operations.

FLEX FATIGUE—Nylon's resilient strength makes tire cord stand up under the complex compression-tension flexing that takes place every time a tire turns—reduces flex-fatigue failures.

BRUISE DAMAGE—Nylon's toughness virtually ends cord ruptures caused by tires hitting curbs and holes at high speeds.



"We've never had a blowout with **nylon cord tires** . . . after 2 years of the roughest use"

"Our costs per ton mile have really come down as a result of having no blowouts with our nylon cord tires after 2 years of the roughest use," says Lester Boyce, President of Boyce Motor Lines, Inc., Canandaigua, N.Y.

"We were averaging less than 25,000 miles with ordinary tires on drive wheels. Tires with plenty of tread left would go out of service from blowouts or carcass ruptures. Then we equipped two new tractors for one of our roughest runs with eight nylon cord tires. They averaged 40,000 miles on the drive wheels and 30,000 more on trailers before we recapped them. And the recaps are excellent.

"Results like this convinced us. Over half of our 1200 rolling wheels are now on nylon. We have 25 new tractors on order—with nylon extra treads specified throughout."

Whether your fleet is large or small, you can make this test. Try a set of nylon cord tires on your toughest

haul, for your heaviest loads. See how they reduce your road delays and carcass failures . . . give a higher percentage of successful recaps and a lower cost per mile. Ask your dealer about nylon cord tires today. (Du Pont makes nylon fibers, does not produce tires. A number of rubber companies have nylon cord tires available.)

E. I. du Pont de Nemours & Co. (Inc.), Wilmington 98, Delaware

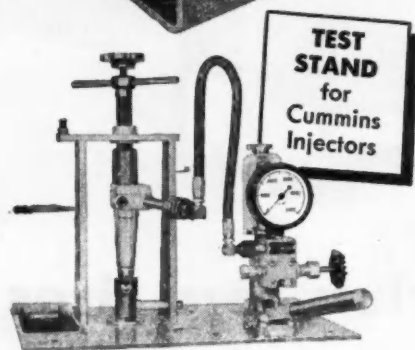
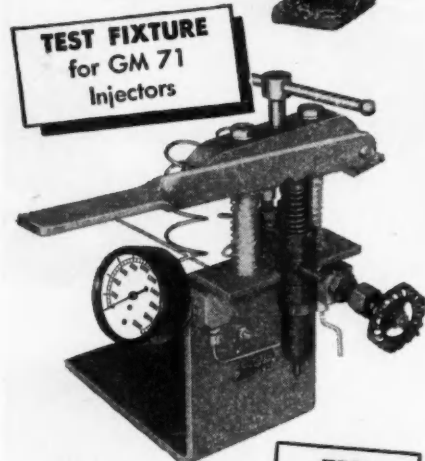
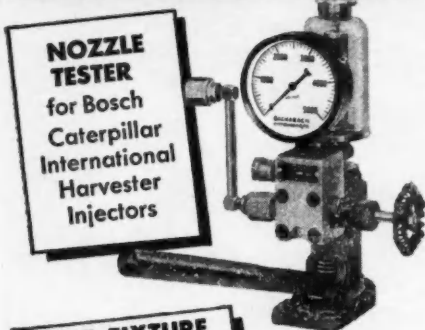


150th Anniversary

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

COMMERCIAL CAR JOURNAL, April, 1952

Essential TESTING INSTRUMENTS



Other Diesel Service Equipment:

- EXHAUST GAS METERS
- NOZZLE CLEANING KITS
- VALVE LAPPING BLOCKS

BACHARACH INDUSTRIAL INSTRUMENT COMPANY
7000 Bennett Street, Pittsburgh 8, Pa.

Send complete information on your Testing Instruments and Cleaning Tools

Name.....

Company.....

Address.....

.....

.....

News Reports

Continued from Page 400

to provide even better products and services to the aircraft, industrial, marine, commercial engine, railroad and oil field applications."

Atomic Age By-Product Used in Tire Production

A radioactive "eye" that sees through rubber has been announced by The B. F. Goodrich Co. The radioactive eye can be used to control rubber coating of fabrics to within thousandths of an inch. Tire-builders use many plies of such fabric in each tire to build the tire carcass.

The Beta-Ray Gage determines thickness by measuring weight per unit area of the fabric as it emerges from the calender rolls. The fabric passes between the jaws of the radioactive scanning device. The lower jaw, positioned beneath the fabric sheet, holds a capsule containing a tiny grain of strontium 90, by-product of atom bomb plants and source of radioactivity in the Beta Gage.

Upper jaw of the gage, mounted above the fabric, contains a detector unit known as an ionization chamber. The lighter the fabric, the more radiation passes through to reach the detector. Changes in the radioactive beam are automatically recorded on a

(TURN TO PAGE 404, PLEASE)

Time Savers...
KEN TIRE CHANGING **TOOLS**
...they're Job Designed

T-70 SET
T-22 T-5 T-21
T-28
T-27
T-18
T-23
T-20
T-19A
T-48
T-50
T-52
T-10
T-26
T-25 New Ford Tire Tool

KEN-TOOLS are hand forged from chrome nickel alloy steel...heat treated for extra long life...Best By Actual Test!

KEN-TOOL... LARGEST EXCLUSIVE MAKERS OF TIRE AND WHEEL CHANGING TOOLS

See Your Local Jobber for Our Complete Line
The KEN-TOOL Mfg. Co.
Akron 5, Ohio

Permalux
FINER DECALCOMANIA

FIRST IN APPEARANCE
ECONOMY
DURABILITY

Made With DuPont "DULUX"
Write Today for details

THE PERMALUX COMPANY
500 Rathbone Ave. • Aurora, Ill.

WOHLERT PARTS *are better*

THEY'RE MADE IN WOHLERT FACTORIES BY PRECISION TRAINED WORKMEN

THERE ARE HUNDREDS OF SUCCESSFUL PARTS IN THE WOHLERT LINE

EVERY WOHLERT PART IS ENGINEERED AND PLAINLY IDENTIFIED

Wohlert Corporation
Lansing 5, Michigan

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Both "V" TYPE and ONE WAY BLADE TYPE

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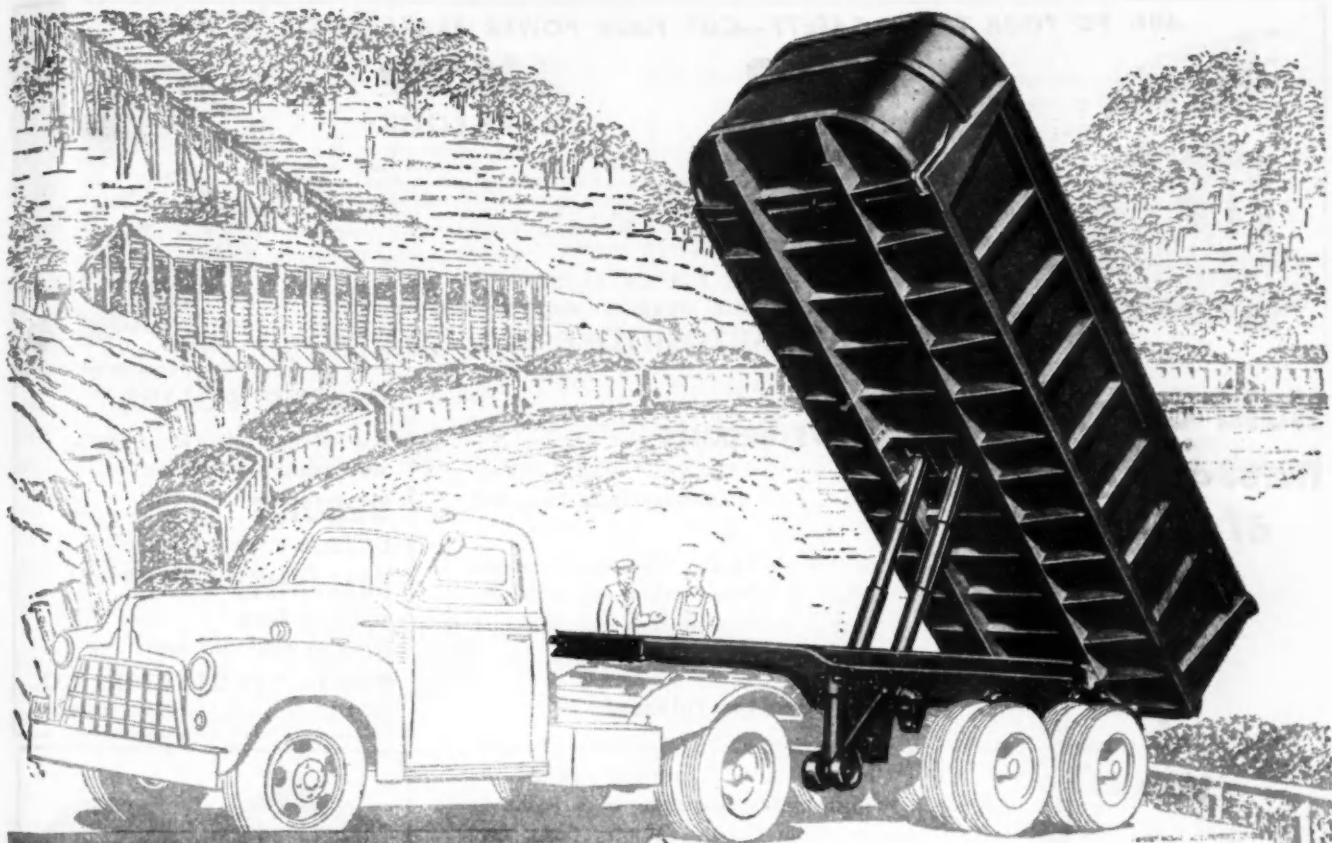
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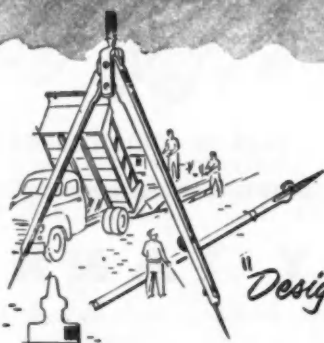
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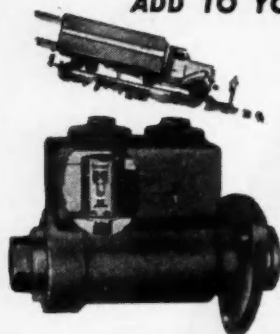
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COMMERCIAL CAR JOURNAL, April, 1952

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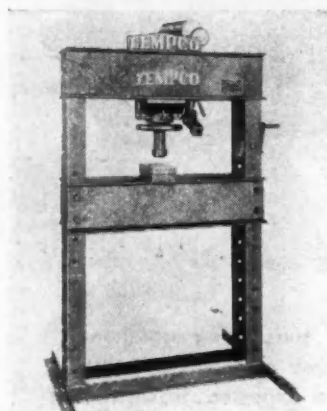
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News Reports

Continued from Page 402

continuous chart. The chart reveals weight of fabric continuously and furnishes a permanent record of all past production for cost control.

GM Develops Thinners

New significant formulas for lacquer thinners are improving automobile finish quality, according to a recent report from General Motors Corp. Research Laboratories. It is claimed that the new concept of lacquer thinner, now applied in GM automobile divisions, has improved both the technique and results of applying lacquer to car bodies.

The solvent portion of the thinner was composed of higher boiling material so that, in drying, the lacquer film on the body had a tendency to flow slightly. The new formulation with low boiling diluent and high boiling solvent reportedly eliminated the tendency of a finish to "orange peel." It is said to improve surface smoothness, require less polishing, and fewer coats of lacquer to build up the specified paint film thickness on GM cars.

END

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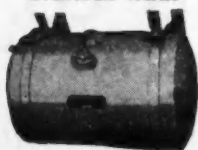

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